

Self-Assessment of Clinical Skills Among Dental Graduates from an Iranian Dental School

Samira Shahsiah¹, Fatemeh Babadi², Nasrin Khajeali³, Fatemeh Zakeri¹, Sanaz Sharifishoshtari⁴ 

¹ Department of Endodontics, School of Dentistry, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

² Department of Oral and Maxillofacial Medicine, School of Dentistry, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

³ Department of Medical Education, Educational Development Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

⁴ Department of Oral and Maxillofacial Radiology, School of Dentistry, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Abstract

Background and Aim: This study aimed to compare the microshear bond strength (μ SBS) of two types of universal adhesives to primary dentin following self-etch (SE) and total-etch (TE) techniques.

Materials and Methods: This cross-sectional study included 156 general dentists who graduated from the School of Dentistry, Ahvaz Jundishapur University of Medical Sciences, between 2020 and 2023. A standardized researcher-designed questionnaire, validated for reliability and validity, was used to assess graduates' clinical skills. Data were analyzed using the Mann-Whitney, Kruskal-Wallis, and Friedman tests, as well as Spearman's correlation coefficient ($\alpha=0.05$).

Results: The participants' mean age was 26.85 years, and the mean total clinical skills score was 3.05. Significant differences were observed among scores across domains ($P<0.001$). The highest scores were achieved in endodontics (3.30), followed by oral and maxillofacial surgery (3.21), pediatric dentistry (3.18), oral radiology (3.18), restorative dentistry (3.13), oral medicine (3.09), periodontology (3.01), prosthodontics (2.87), and orthodontics (2.36). All mean domain scores were above average. A significant difference in total scores was observed based on graduation year ($P<0.001$), with a significant positive correlation between total scores and age ($P<0.001$). Male graduates demonstrated significantly higher scores than female graduates in prosthodontics and oral and maxillofacial surgery ($P<0.05$).

Conclusion: The mean self-assessed total clinical competence scores of graduates were above average across all domains, with endodontics and oral and maxillofacial surgery scoring the highest, while orthodontics and prosthodontics scored the lowest. Age and gender were significant factors influencing clinical competence scores.

Key Words: Clinical Competence; Dental Education; Graduate Self-Assessment; Endodontics; Orthodontics

 Corresponding author:
Sanaz Sharifishoshtari,
Department of Oral and
Maxillofacial Radiology, School
of Dentistry, Ahvaz
Jundishapur University of
Medical Sciences, Ahvaz, Iran

Sharifisanaz138@gmail.com

Received: 16 April 2025

Accepted: 20 June 2025

➤ **Cite this article as:** Shahsiah S, Babadi F, khajeali N, Zakeri F, Sharifishoshtari S. Self-Assessment of Clinical Skills Among Dental Graduates from an Iranian Dental School. *J Iran Dent Assoc.* 2025; 37(1-2):35-46.

Introduction

The primary responsibility of any medical education system is to train clinically competent professionals capable of promoting public health. Over the past decade, there has been a significant shift from traditional models of medical and dental education to competency-based frameworks aimed at enhancing the skills and capabilities of graduates (1-3). A clinically competent dental professional is expected to demonstrate comprehensive knowledge, a positive attitude, requisite clinical and social skills, and effective clinical decision-making in oral healthcare (4).

In Iran, dental education spans six years. The first and second years focus on basic sciences, while preclinical dental courses dominate the third year. Students begin their clinical training in the fourth year, continuing through the fifth and sixth years (5). Among the many components of competency, clinical skills are pivotal, making the development of these abilities a central mission of dental education systems (2). Multiple factors, including student attributes, mentor effectiveness, departmental resources, and institutional environment, influence the quality of dental education and the acquisition of clinical skills (6).

In recent years, substantial efforts have been made in Iran to enhance dental education quality. These initiatives include conducting faculty development workshops, integrating virtual learning tools, and adopting innovative teaching methods to empower both mentors and students (7, 8).

Evaluating clinical competency and professional skills is essential for measuring the effectiveness of educational curricula. Such assessments provide critical insights into curriculum strengths, limitations, and opportunities for improvement (9). The evaluation of medical and dental curricula is particularly sensitive, as it plays a vital role in maintaining and enhancing educational quality at all levels (10). Competency and skills assessments can be conducted during a course or post-completion, typically by mentors or instructors.

Self-assessment, where learners evaluate their own skills, offers another valuable approach for appraising acquired competencies. To be effective, any assessment method must be valid, reliable, flexible, comprehensive, relevant, and feasible to administer within a reasonable timeframe. Evidence suggests that self-assessment provides deeper insights into students' clinical capabilities than traditional written or practical examinations. Consequently, many universities worldwide incorporate self-assessment as a complementary tool alongside mentor evaluations (11-13).

Feedback from recent dental graduates is particularly valuable, as they are well-positioned to evaluate their education's quality and relevance in real-world clinical settings.

According to Iran's general dentistry [educational] program, graduates are required to develop competencies in the following areas: (I) Communication skills, (II) Professionalism and ethical commitments, (III) Continuous self-improvement and lifelong learning, (IV) Decision-making, reasoning, and problem-solving, (V) Health promotion and preventive care, (VI) Comprehensive patient care, and (VII) Core clinical skills, including history taking, clinical examination, documentation, research, imaging, and basic paraclinical and diagnostic tests.

At Ahvaz Jundishapur University of Medical Sciences, dental education follows a lecture-based curriculum supplemented by classroom instruction, intra-departmental conferences, and hands-on training in both preclinical and clinical environments. While the curriculum aims to address the future professional demands of graduates, it remains unclear to what extent these goals are achieved. Evidence suggests that dental students' competencies across various fields often fall short of ideal standards (14-16).

Therefore, this study aimed to evaluate the self-assessed clinical skills of dental graduates from Ahvaz Jundishapur University of Medical Sciences. By exploring the perspectives of recent graduates, this research seeks to identify

potential gaps in the current educational curriculum and propose strategies for improvement.

Materials and Methods

This cross-sectional study was conducted on 156 general dentists graduated from the School of Dentistry of Ahvaz Jundishapur University during 2020-2023. The study protocol was approved by the ethics committee of the university (IR.AJUMS.REC.1402.507).

Eligibility criteria:

The inclusion criteria were (I) all general dentists graduated from the School of Dentistry of Ahvaz Jundishapur University during 2020-2023 and (II) willingness for participation in the study. Those who did not answer some of the questions were excluded.

Sample size:

The sample size was calculated to be 154 according to a previous study (17) and assuming $\alpha=0.05$, $s=5.7$, and $d=0.9$ using the sample size calculation formula. Considering 10% possible dropouts, 171 graduates were recruited.

Data collection:

A researcher-designed questionnaire was used for data collection regarding the acquired clinical skills of the graduates. A self-report clinical skills assessment questionnaire was designed by experts in the field, and according to the dental education curriculum. The validity of the questionnaire was confirmed according to the expert opinion of 9 dental faculty members of the university. The reliability of the questionnaire was assessed by test-retest reliability assessment. For this purpose, the questionnaire was administered among 30 randomly selected participants twice with a 15-day interval, and the intraclass correlation coefficient was subsequently calculated. The results showed that all questions had high intraclass correlation coefficient values (>0.91). Therefore, the reliability of the questionnaire was confirmed.

The questionnaire included 9 domains of oral radiology (9 questions), oral medicine (8 questions), pediatric dentistry (11 questions), endodontics (8 questions), restorative dentistry

(11 questions), orthodontics (7 questions), prosthodontics (7 questions), periodontology (7 questions), and oral and maxillofacial surgery (5 questions).

Oral radiology domain: The oral radiology questions asked for the ability to take suitable intraoral radiographs by the periapical, bitewing, and parallel techniques (question 1), the ability to detect dental caries, calculus, and bone loss on intraoral radiographs (question 2), the ability to detect normal anatomical landmarks on intraoral radiographs (question 3), the ability to detect normal anatomical landmarks on panoramic radiographs (question 4), the ability for radiographic interpretation and differential diagnosis of radiolucent, radiopaque, and mixed lesions (question 5), knowledge about the radiographic considerations of patients with specific diseases (question 6), knowledge about the radiographic techniques and errors (question 7), knowledge about X-ray protection principles (question 8), and complete adherence to the infection control protocols (question 9).

Oral medicine domain: The oral medicine questions asked about the ability to take a complete medical and dental history from patients (question 1), having sufficient knowledge about the normal anatomy of intraoral and extraoral structures (question 2), correct clinical examination of intraoral and extraoral structures including cranial nerves, temporomandibular joints, lymph nodes, salivary glands, and thyroid gland (question 3), knowledge about dental considerations in patients with systemic conditions such as diabetes mellitus, hypertension, renal disease, pregnancy, etc. (question 4), diagnosis, treatment, and follow-up of oral lesions, if required (question 5), the ability to differentiate between benign and malignant lesions (question 6), clinical and radiographic caries detection ability (question 7), and writing a prescription and referral letter for patients, if required (question 8).

Pediatric dentistry domain: The pediatric dentistry questions asked about the skills to properly communicate with children and adopt different behavioral control methods (question

1), the ability to correctly administer anesthetic agents for children (question 2), primary tooth extraction (question 3), pulpotomy (question 4), pulpectomy (question 5), caries detection (question 6), fissure sealant, and preventive resin restoration (question 7), composite and amalgam restorations for children (question 8), management of dental trauma in children (question 9), oral hygiene instructions and preventive methods such as fluoride therapy (question 10), and the ability to diagnose acquired and developmental disorders (question 11).

Endodontics domain: The endodontics questions asked about the ability to diagnose pulpal and periapical diseases by taking a history, clinical examination, pulpal and periapical tests, and radiography (question 1), the ability to implement and interpret different pulpal and periapical tests (question 2), the ability to properly isolate the respective tooth (question 3), the ability to prepare a suitable access cavity (question 4), the ability to perform proper cleaning and shaping and obturation of the canal in anterior, premolar, and molar teeth (question 5), pain management between treatment sessions and after endodontic treatment (question 6), non-surgical endodontic retreatment (question 7), and taking correct intraoperative radiographs with proper horizontal and vertical angulations (question 8).

Restorative dentistry domain: The restorative dentistry questions asked about the ability to detect different types of caries in different tooth surfaces by different methods (question 1), treatment planning for a proper restoration (question 2), tooth preparation with minimal damage to sound tooth structure (question 3), Class I, II and V amalgam restorations (question 4), Class I, II, III, IV, and V composite restorations (question 5), familiarity with different types of base and liners and their application method (question 6), retention methods and types of intracanal posts (question 7), classifications and application of composite resins and different generations of bonding agents (question 8), amalgam build up restorations (question 9), composite build up

restorations (question 10), and pulp capping treatments (question 11).

Orthodontics domain: The orthodontics questions asked about the ability to diagnose dental and skeletal malocclusions according to the diagnostic records and clinical examination (question 1), analysis of diagnostic records of orthodontic patients such as diagnostic casts, panoramic radiographs, cephalograms, and photographs (question 2), proper treatment planning using diagnostic records and their analysis (question 3), detection of cases requiring space maintenance and proper treatment planning (question 4), different types of orthodontic fixed and removable appliances (question 5), clinical examination and treatment of patients that require growth modification with abnormal facial and dental ratios and angulations (question 6), and orthodontic diagnosis and treatment planning for patients requiring removable appliances.

Prosthodontics: The prosthodontics domain asked questions about the knowledge about different dental materials and their applications such as impression materials and cements (question 1), diagnosis and treatment planning for non-complex partially and completely edentulous cases (question 2), making an impression (question 3), bite records (question 4), assessment of the quality of prosthesis, its modification and adjustment (question 5), fabrication of post and core and crown restorations (question 6), and detection of cases that need to be referred to a prosthodontist (question 7).

Periodontology domain: This domain asked questions about the ability to diagnose different periodontal diseases (question 1), performing periodontal examinations and calculation of periodontal indices (question 2), oral hygiene instruction to patients (question 3), supragingival and subgingival scaling and root planning with ultrasonic instruments (question 4), supragingival and subgingival scaling and root planning manually (question 5), simple periodontal surgical procedures such as a simple flap and crown lengthening surgery (question 6), and treatment planning for

periodontal patients (question 7).

Oral and maxillofacial surgery: This domain asked questions about the ability to diagnose and manage patients requiring tooth extraction (question 1), extraction of anterior, premolar, and molar teeth and residual roots of the maxilla and mandible (question 2), drainage of intraoral abscess (question 3), suturing techniques (question 4), and prevention and management of medical and dental emergencies (question 5).

The questions were scored using a 5-point Likert scale of totally agree (score 4), partially agree (score 3), disagree (score 2), totally disagree (score 1), and no opinion (score 0). The mean score was then calculated for each question.

Statistical analysis:

The measures of central dispersion were reported for quantitative data while the frequency and percentage were reported for qualitative data. Normal distribution of data was analyzed by the Kolmogorov-Smirnov test. Accordingly, due to non-normal data distribution, statistical analyses were carried out by the Mann-Whitney, Kruskal-Wallis, independent sample t, and Friedman tests and Spearman's correlation coefficient using SPSS version 26 (SPSS Inc., IL, USA) at 0.05 level of significance.

Results

A total of 156 participants were evaluated for their competency across nine dental domains, yielding a response rate of 91.2%. The demographic characteristics of the study population are outlined in Table 1, while detailed frequency percentages of responses to individual questions across the nine domains are provided in Appendix 1. The internal consistency of the questionnaire was confirmed by an overall Cronbach's alpha of 0.906, with domain-specific reliability scores ranging from 0.760 in oral medicine to 0.897 in orthodontics, indicating strong internal validity.

Domain-Specific Competencies:

Analysis of domain-specific competencies, as summarized in Table 2, revealed substantial variability across the nine domains. In oral

radiology, participants demonstrated the highest competency in acquiring intraoral radiographs (Q1), whereas the ability to detect anatomical landmarks on panoramic images (Q4) received the lowest scores. A similar trend was observed in oral medicine, where caries detection (Q7) was the highest-scoring competency, while differentiating between benign and malignant lesions (Q6) was identified as the weakest area.

In pediatric dentistry, participants scored highest in performing fissure sealants (Q7), whereas diagnosing developmental disorders (Q11) was the least competent area. For endodontics, intraoperative radiograph interpretation (Q8) received the highest scores, whereas non-surgical endodontic retreatment (Q7) was associated with the lowest competency. In restorative dentistry, caries detection on various surfaces (Q1) emerged as the strongest skill, whereas the application of composite resin classifications (Q8) scored the lowest.

Orthodontic skills demonstrated a similar trend, with the highest competency observed in diagnosing dental and skeletal malocclusions (Q1) and the lowest in treatment planning (Q3). In prosthodontics, participants scored highest in recognizing cases requiring specialist referrals (Q7), whereas treatment planning for edentulous cases (Q2) received the lowest scores. Periodontology showed the highest competency in scaling and root planning (Q4), while performing simple periodontal surgeries (Q6) scored the lowest. Similarly, in oral and maxillofacial surgery, managing extractions (Q1) was the strongest skill, whereas managing medical and dental emergencies (Q5) was the weakest.

Statistical Analysis:

Statistical analysis revealed significant differences in mean domain scores ($P < 0.001$), as detailed in Table 2, with all domains scoring significantly above the average competency threshold of 2 ($P < 0.001$). Comparisons based on graduation year (Table 3) showed that participants who graduated in 2020 demonstrated the highest overall competency, while those who graduated in 2023 consistently

Table 1. Demographic information of the participants

Demographic information			
Variable	Category	Number	Percentage (%)
Gender	Female	78	50.0
	Male	78	50.0
Graduation year	2020	38	24.4
	2021	39	25.0
	2022	37	23.7
	2023	42	26.9
Age	Mean $\pm$ std. deviation		1.69 $\pm$ 26.85

scored the lowest across all domains ($P < 0.001$). Gender-based comparisons (Table 4) revealed significant differences in two domains. Male participants outperformed females in prosthodontics ($P = 0.015$) and oral and maxillofacial surgery ($P < 0.001$); however, no significant gender differences were observed in other domains ($P > 0.05$). Additionally, age was positively correlated with competency scores in several domains, including oral medicine ($P = 0.009$), pediatric dentistry ($P = 0.037$), endodontics ($P = 0.037$), restorative dentistry ($P = 0.001$), prosthodontics ($P < 0.01$), and periodontology ($P = 0.015$). This correlation suggests that older participants consistently exhibited higher competency levels across multiple domains ($P < 0.001$).

The findings, summarized in Table 5, demonstrate significant variations in dental competencies influenced by domain, demographic factors, and professional experience. The results highlight areas of strength, such as intraoral radiograph acquisition and scaling/root planning, alongside notable weaknesses, including treatment planning, emergency management, and advanced procedural skills. These findings underscore the importance of implementing tailored educational strategies to address specific areas of weakness and enhance overall competency levels among dental professionals.

Discussion

This study evaluated the self-perceived clinical competencies of dental graduates from Ahvaz Jundishapur University of Medical Sciences. The

findings revealed that graduates achieved above-average scores across all domains, suggesting a high level of clinical skill. However, a significant variation was observed in scores among different domains. Specifically, the highest scores were achieved in the domains of endodontics and oral and maxillofacial surgery, while the lowest were recorded in orthodontics and prosthodontics.

Zitzman et al. (18) conducted a similar evaluation of the dental curriculum at the School of Dentistry, University of Basel, Switzerland, based on feedback from both graduates and supervisors involved in recruitment. Their results indicated that graduates possessed stronger theoretical knowledge compared to clinical skills, with particularly high competencies in oral surgical procedures and dental implant treatments. The study emphasized the necessity for increased clinical practice to bridge this gap. Similar to our findings, their study reported high scores in oral and maxillofacial surgery and endodontics but lower scores in orthodontics. This alignment underscores the need to develop strategies to enhance orthodontic training in dental education to ensure comprehensive clinical competence.

Wanigasooriya (19) assessed the surgical competencies of general dental students in Sri Lanka using a self-report questionnaire. The results showed that students excelled in restorative procedures, caries detection, and periodontal disease management, while they demonstrated lower proficiency in managing myocardial infarctions, oral manifestations of

Appendix 1. Frequency percentage of different answers to each question of the domains

Frequency percentage of different answers to each question of the domains							
Domain	Question	Totally agree Number (%)	Partially agree Number (%)	Disagree Number (%)	Totally disagree Number (%)	No opinion Number (%)	Mean
Oral Radiology	1	100(64.1)	45(28.8)	10(6.4)	0(0.0)	1(0.6)	3.55
	2	105(67.3)	46(29.5)	15(3.2)	0(0.0)	0(0.0)	3.64
	3	77(49.4)	64(41.0)	15(9.6)	0(0.0)	0(0.0)	3.21
	4	61(39.1)	72(46.2)	19(12.2)	4(2.6)	0(0.0)	2.16
	5	11(7.1)	44(28.2)	65(41.7)	31(19.9)	5(3.2)	2.80
	6	25(16.0)	84(53.8)	39(25.0)	8(5.1)	0(0.0)	3.22
	7	56(35.9)	80(51.3)	19(12.2)	1(0.6)	0(0.0)	3.25
	8	63(40.4)	70(44.9)	23(14.7)	0(0.0)	0(0.0)	3.41
	9	78(50.0)	65(41.7)	13(8.3)	0(0.0)	0(0.0)	3.37
Oral medicine	1	69(44.2)	76(48.7)	11(7.1)	0(0.0)	0(0.0)	3.37
	2	60(38.5)	77(49.4)	19(12.2)	0(0.0)	0(0.0)	3.26
	3	47(30.1)	78(50.0)	28(17.9)	2(1.3)	1(0.6)	3.07
	4	49(31.4)	84(53.8)	22(14.1)	1(0.6)	0(0.0)	3.16
	5	23(14.7)	79(50.6)	37(23.7)	10(6.4)	7(4.5)	2.64
	6	13(8.3)	56(35.9)	42(26.9)	26(16.7)	19(12.2)	2.11
	7	100(64.1)	48(30.8)	8(5.1)	0(0.0)	0(0.0)	3.58
	8	91(58.3)	58(37.2)	7(4.5)	0(0.0)	0(0.0)	3.53
Pediatric dentistry	1	51(32.7)	82(52.6)	21(13.5)	2(1.3)	0(0.0)	3.16
	2	61(39.1)	81(51.9)	13(8.3)	1(0.6)	0(0.0)	3.29
	3	98(62.8)	53(34.0)	5(3.2)	0(0.0)	0(0.0)	3.59
	4	72(46.2)	75(48.1)	9(5.8)	0(0.0)	0(0.0)	3.40
	5	58(37.2)	62(39.7)	30(19.2)	1(0.6)	5(3.2)	3.07
	6	95(60.9)	52(33.3)	9(5.8)	0(0.0)	0(0.0)	3.55
	7	101(64.7)	48(30.8)	7(4.5)	0(0.0)	0(0.0)	3.60
	8	86(55.1)	63(40.4)	7(4.5)	0(0.0)	0(0.0)	3.50
	9	10(6.4)	52(33.3)	66(42.3)	25(16.0)	3(1.9)	2.26
	10	92(59.0)	58(37.2)	4(2.6)	2(1.3)	0(0.0)	3.53
	11	12(7.7)	44(28.2)	54(34.6)	32(20.5)	14(9.0)	2.05

Endodontics	1	80(51.3)	68(43.6)	8(5.1)	0(0.0)	0(0.0)	3.46
	2	77(49.4)	69(44.2)	8(5.1)	2(1.3)	0(0.0)	3.41
	3	73(46.8)	71(45.5)	8(5.1)	4(2.6)	0(0.0)	3.36
	4	70(44.9)	76(48.7)	10(6.4)	0(0.0)	0(0.0)	3.38
	5	65(41.7)	80(51.3)	10(6.4)	1(0.6)	0(0.0)	3.33
	6	71(45.5)	78(50.0)	7(4.5)	0(0.0)	0(0.0)	3.41
	7	29(8.6)	54(34.6)	50(132)	14(9.0)	9(5.8)	2.51
	8	86(55.1)	65(41.7)	5(3.2)	0(0.0)	0(0.0)	3.51
Restorative dentistry	1	88(56.4)	65(41.7)	3(1.9)	0(0.0)	0(0.0)	3.54
	2	79(50.6)	74(47.4)	3(1.9)	0(0.0)	0(0.0)	3.48
	3	63(40.4)	83(53.2)	10(6.4)	0(0.0)	0(0.0)	3.33
	4	69(44.2)	79(50.6)	8(5.1)	0(0.0)	0(0.0)	3.39
	5	74(47.4)	76(48.7)	6(3.8)	0(0.0)	0(0.0)	3.43
	6	27(17.3)	54(34.6)	50(32.1)	25(16.0)	0(0.0)	2.53
	7	39(25.0)	74(47.4)	34(21.8)	9(5.8)	0(0.0)	2.91
	8	28(17.9)	51(32.7)	52(33.3)	22(14.1)	3(1.9)	2.50
	9	63(40.4)	59(37.8)	27(17.3)	7(4.5)	0(0.0)	3.14
	10	52(33.3)	75(48.1)	23(14.7)	6(3.8)	0(0.0)	3.10
	11	59(37.8)	61(39.1)	26(16.7)	9(5.8)	1(0.6)	3.07
Orthodontics	1	19(12.2)	88(56.4)	30(19.2)	18(11.5)	1(0.6)	2.67
	2	9(5.8)	67(42.9)	52(33.3)	24(15.4)	4(2.6)	2.33
	3	6(3.8)	67(42.9)	52(33.3)	17(10.9)	14(9.0)	2.21
	4	6(3.8)	71(45.5)	56(35.9)	17(10.9)	6(3.8)	2.34
	5	8(5.1)	70(44.9)	60(38.5)	11(7.1)	7(4.5)	2.39
	6	8(5.1)	67(42.9)	50(32.1)	23(14.7)	8(5.1)	2.28
	7	8(5.1)	67(42.9)	56(35.9)	17(10.9)	8(5.1)	2.32
Prosthodontics	1	36(23.1)	55(35.3)	47(30.1)	18(11.5)	0(0.0)	2.69
	2	16(10.3)	58(37.2)	61(39.1)	19(12.2)	2(1.3)	2.42
	3	43(27.6)	65(41.7)	39(25.0)	9(5.8)	0(0.0)	2.91
	4	43(27.6)	73(46.8)	33(21.2)	7(4.5)	0(0.0)	2.97
	5	38(24.4)	69(44.2)	37(23.7)	12(7.7)	0(0.0)	2.85
	6	56(35.9)	72(46.2)	21(13.5)	7(4.5)	0(0.0)	3.13
	7	58(37.2)	69(44.2)	22(14.1)	7(4.5)	0(0.0)	3.14

Periodontology	1	64(41.0)	60(38.5)	24(15.4)	8(5.1)	0(0.0)	3.15
	2	43(27.6)	69(44.2)	35(22.4)	9(5.8)	0(0.0)	2.93
	3	64(41.0)	78(50.0)	12(7.7)	2(1.3)	0(0.0)	3.30
	4	86(55.1)	52(33.3)	17(10.9)	1(0.6)	0(0.0)	3.42
	5	9(5.8)	36(23.1)	60(38.5)	51(32.7)	0(0.0)	2.98
	6	36(23.1)	45(28.8)	44(28.2)	19(12.2)	12(7.7)	2.47
	7	40(25.6)	64(41.0)	39(25.0)	12(7.7)	1(6.0)	2.83
Oral and maxillofacial surgery	1	83(53.2)	60(38.5)	13(8.3)	0(0.0)	0(0.0)	3.44
	2	76(48.7)	65(41.7)	12(7.7)	2(1.3)	1(0.6)	3.36
	3	61(39.1)	68(43.6)	13(8.3)	6(3.8)	8(5.1)	3.07
	4	58(37.2)	72(46.2)	18(11.5)	5(3.8)	2(1.3)	3.15
	5	57(36.5)	59(37.8)	32(20.5)	6(3.8)	2(1.3)	3.04

Table 2. Measures of central dispersion for the domain scores of the questionnaire

Central dispersion for the domain scores of the questionnaire				
Domain	Mean± std. deviation	Minimum	Maximum	P-value*
Oral radiology	3.18±0.44	2	4	<0.001
Oral medicine	3.09±0.47	1.75	3.88	
Pediatric dentistry	3.18±0.44	2	4	
Endodontics	3.30±0.49	1.63	4	
Restorative dentistry	3.13±0.52	1.91	4	
Orthodontics	2.36±0.71	0.14	4	
Prosthodontics	2.87±0.64	1.14	4	
Periodontology	3.01±0.61	1	4	
Oral and maxillofacial surgery	3.21±0.64	1.20	4	
Total score	3.05±0.28	2.12	4	
*Friedman test				

Table 3. Comparison of the mean domain scores according to the graduation year

Domain	Mean domain scores by graduation year				P-value*
	2020 Mean± SD	2021 Mean± SD	2022 Mean± SD	2023 Mean± SD	
Oral radiology	3.33±0.33	3.28±0.35	3.15±0.54	2.99±0.46	0.002
Oral medicine	3.26±0.44	3.20±0.49	3.03±0.48	2.89±0.38	<0.001
Pediatric dentistry	3.36±0.36	3.25±0.44	3.14±0.46	2.99±0.41	0.001
Endodontics	3.48±0.36	3.41±0.41	3.34±0.54	2.99±0.47	<0.001
Restorative dentistry	3.42±0.42	3.34±0.30	3.07±0.48	2.72±0.53	<0.001
Orthodontics	2.35±0.75	2.58±0.68	2.31±0.71	2.22±0.69	0.187
Prosthodontics	3.28±0.31	3.22±0.47	2.58±0.60	2.44±0.63	<0.001
Periodontology	3.18±0.55	3.17±0.60	3.02±0.61	2.70±0.56	<0.001
Oral and maxillofacial surgery	3.43±0.53	3.37±0.60	3.21±0.62	2.87±0.65	<0.001
Total score	3.25±0.20	3.21±0.18	3.004±0.17	2.78±0.27	<0.001

Table 4. Comparison of the mean domain scores according to gender

Domain	Mean domain scores by graduation year		P-value*
	Females Mean± SD	Males Mean± SD	
Oral radiology	3.16±0.47	3.21±0.42	0.589
Oral medicine	3.11±0.48	3.07±0.46	0.556
Pediatric dentistry	3.22±0.45	3.14±0.42	0.293
Endodontics	3.26±0.55	3.34±0.40	0.577
Restorative dentistry	3.09±0.56	3.17±0.48	0.423
Orthodontics	2.45±0.65	2.27±0.76	0.212
Prosthodontics	2.72±0.72	3.03±0.50	0.015
Periodontology	3.007±0.63	3.02±0.60	0.810
Oral and maxillofacial surgery	2.99±0.68	3.43±0.51	<0.001
Total score	3.03±0.33	3.08±0.23	0.248
*Mann-Whitney test			

Table 5. Correlation of the mean scores with age

Domain	Correlation With Age	
	Correlation coefficient	P-value*
Oral radiology	0.107	0.182
Oral medicine	0.210	0.009
Pediatric dentistry	0.168	0.037
Endodontics	0.167	0.037
Restorative dentistry	0.263	0.001
Orthodontics	0.131	0.102
Prosthodontics	0.316	<0.001
Periodontology	0.195	0.015
Oral and maxillofacial surgery	0.129	0.110
Total score	0.344	<0.001
*Spearman's correlation test		

systemic diseases, and medical emergencies. These findings highlight varying patterns of clinical skill acquisition across regions and educational systems.

In the present study, a significant positive correlation was found between the total clinical skills score and both graduation year and age. Older graduates exhibited higher self-assessed skills, which may reflect the influence of accumulated clinical experience over time. A related study by Maleknejad Yazdi et al. (20) evaluated graduate feedback on restorative dentistry courses at Mashhad University of Medical Sciences. Over half of the respondents emphasized the importance of theoretical coursework, with the majority agreeing on the adequacy of practical training logs but recommending greater focus on advanced composite restoration techniques.

Gender-based differences were also observed, with male graduates scoring significantly higher than females in prosthodontics and oral and maxillofacial surgery. Conversely, Iguchi et al. (21) reported that female dental students in Japan rated their communication skills in clinical courses significantly higher than their male counterparts, suggesting higher self-esteem among female students. Similarly, Wiener et al. (22) found that female students assigned themselves higher self-assessment scores compared to males. The disparity between these findings and the present study may be attributable to cultural differences. Furthermore, Colbert-Getz et al. (23) observed that high-anxiety female students demonstrated more accurate self-assessments than high-anxiety male students, while no significant gender differences were noted among students with moderate or low anxiety. They concluded that self-assessment scores are influenced by both anxiety levels and self-esteem. Additionally, research has suggested that female students may underestimate their abilities in self-assessments, particularly in physical or stress-intensive tasks (24). These findings suggest that the lower self-assessed scores of female graduates in prosthodontics and oral and maxillofacial surgery may be related to stress and perceived physical limitations.

Further studies are necessary to explore the influence of gender on self-assessment in clinical training.

This study was conducted at a single university, which may limit the generalizability of the findings. Future multi-center studies are warranted to explore the influence of institutional factors on clinical skill acquisition among graduates. Additionally, comparing self-assessment scores with mentor-assessment scores could provide insights into the reliability of self-assessment. Finally, further research should focus on identifying and evaluating factors that influence clinical skill development in dental education.

Conclusion

The mean self-assessed clinical skills scores of graduates from Ahvaz Jundishapur University of Medical Sciences were above average and significantly correlated with age. The highest scores were achieved in endodontics and oral and maxillofacial surgery, while the lowest scores were recorded in orthodontics and prosthodontics. These findings underscore the need for targeted interventions to enhance training in areas where graduates report lower competencies.

References

1. Elzubeir MA, Rizk DE. Assessing confidence and competence of senior medical students in an obstetrics and gynaecology clerkship using an OSCE. *Education for Health*. 2001;14(3):373-82.
2. Kiyak HA, Brudvik J. Dental students' self-assessed competence in geriatric dentistry. *Journal of dental Education*. 1992;56(11):728-34.
3. Montero J, Dib A, Guadilla Y, Flores J, Santos JA, Aguilar RA, et al. Dental students' perceived clinical competence in prosthodontics: comparison of traditional and problem-based learning methodologies. *Journal of dental education*. 2018; 82(2):152-62.
4. Lofmark A, Smide B, Wikblad K. Competence of newly-graduated nurses—a comparison of the perceptions of qualified nurses and students. *Journal of Advanced Nursing*. 2006;53(6):721-8.
5. Jowkar Z, Masoumi M, Mahmoodian H. Psychological stress and stressors among clinical

- dental students at Shiraz School of Dentistry, Iran. *Advances in medical education and practice*. 2020; 113-20.
6. Education IoMCotFoD. Dental education at the crossroads: challenges and change: National Academies; 1995.
 7. Pakfetrat A, Hoseinpour Jajarm H, Basirat M, Javadzade Bolouri A, Delavarian Z, Shakeri MT. Evaluation of the diagnostic accuracy of oral and maxillofacial lesions in referred patients to oral medicine department of Mashhad dental school and the educational implications. *Future of Medical Education Journal*. 2015;5(1):52-7.
 8. Basirat M, Jahandideh Y, Zaker-Jafari H, Kia S, Pourhabibi Z. Evaluation of Diagnostic skill of senior dental students of Guilan university of medical sciences about common oral diseases in 2014-2015. *Research in Medical Education*. 2016;8(3):1-8.
 9. Davis MH, Harden RM. Planning and implementing an undergraduate medical curriculum: the lessons learned. *Medical teacher*. 2003;25(6):596-608.
 10. Esmaeili M, Hozni S, Mosazadeh B, Zavareh A. Good teacher's characteristics and its influence on dental students academic motivation in guilan university of medical sciences. *Research in medical education*. 2017;9(3):18-0.
 11. Morrison J. ABC of learning and teaching in medicine: Evaluation. *BMJ (Clinical Research ed)*. 2003;326(7385):385-7.
 12. Hsu T-C, Tsai SS-L, Chang JZ-C, Yu S-H, Lai EH-H, Lin C-P. Core clinical competencies for dental graduates in Taiwan: considering local and cultural issues. *Journal of Dental Sciences*. 2015;10(2):161-6.
 13. Greenwood GE, Bridges Jr CM, Ware WB, McLean JE. Student evaluation of college teaching behaviors instrument: a factor analysis. *The Journal of Higher Education*. 1973;44(8):596-604.
 14. Ozer F, Karakaya S, Altinoz C. Towards a Competency-Based Curriculum in Turkey: Students' Reflection. *European Journal of Dental Education*. 2004;8(2):96.
 15. Kemelova G, Tuleutaeva S, Aimbetova D, Garifullina R. The objective structured clinical examination in dentistry: Strengths and weaknesses. *Stomatologia*. 2019;98(4):8-11.
 16. Henzi D, Davis E, Jasinevicius R, Hendricson W. In the students' own words: what are the strengths and weaknesses of the dental school curriculum? *Journal of Dental Education*. 2007;71(5):632-45.
 17. Nejad Shamsi P, Zaker-Jafari H, Basirat M, Zaker-Jafari A. Self-assessment of senior dental students about acquired skills based on the educational program. *Research in Medical Education*. 2017;9(3):78-3.
 18. Zitzmann NU, Yoon-Büchel N, Bühler J, Dettwiler CA, Weiger R. Evaluation of the dental curriculum at the University of Basel. *Swiss Dental Journal SSO-Science and Clinical Topics*. 2016;126(12): 1134-9.
 19. Wanigasooriya N. Student self-assessment of essential skills in dental surgery. *British Dental Journal*. 2004;197(5):11-4.
 20. MaleknejadYazdi F, Danaeefar N, Jahantigh M, Akbari M. Evaluation of the topics of theoretical and clinical courses of operative dentistry in general dentistry major: Alumni perspectives. *Journal of Mashhad Dental School*. 2013;37(1):65-72.
 21. Iguchi A, Hasegawa Y, Fujii K. Student potential for self-assessment in a clinical dentistry practical training course on communication skills. *Medical Science Educator*. 2020;30(4):1503-13.
 22. Wiener RC, Waters C, Doris J, McNeil DW. Comparison of dental students' self-evaluation and faculty evaluation of communication skills during a standardized patient exercise. *Journal of dental education*. 2018;82(10):1043-50.
 23. Colbert-Getz JM, Fleishman C, Jung J, Shilkofski N. How do gender and anxiety affect students' self-assessment and actual performance on a high-stakes clinical skills examination? *Academic medicine*. 2013;88(1):44-8.
 24. Lind DS, Rekkas S, Bui V, Lam T, Beierle E, Copeland Iii E. Competency-based student self-assessment on a surgery rotation. *Journal of Surgical Research*. 2002;105(1):31-4.