Original Article

Assessing Clinical Dental Education from the Students' Perspective at Shiraz School of Dentistry

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Abstract

Introduction: Apart from being one of the main objectives in the educational program, acquiring clinical skills is considered as a principle element of competency in a dentist. The aim of this study was to assess students' viewpoints regarding the educational quality of clinical skills in different departments of their educational environment.

Methods: This cross-sectional study was conducted using a self-made questionnaire, comprising of 140 questions designed for four dental departments of pediatrics, oral medicine, radiology and orthodontics. Validity of the questionnaire was confirmed by the tutors and the reliability was more than 90%. Statistical analysis was done using one-way ANOVA, Pearson correlation coefficient, Tukey test, repeated measures MANOVA and LSD paired comparison test.

Results: The highest scores belonged to activities such as class I & II cavity preparation, and the lowest scores were given to tasks such as pulpotomy and pulpectomy. In the departments of pediatrics, oral medicine and radiology, tutors' supervision over students work and in the orthodontics department, students' self confidence while performing tasks had the lowest scores. However, level of students' theoretical knowledge, regarding the practical skills, obtained the highest score in all departments.

Conclusion: Our findings confirmed that students have properly acquired essential clinical skills. However, they haven't reached the desired level of competency in none-core skills, so they need to receive more effective education in certain areas.

Keywords: Clinical skills, Dental education, Students, Assessment

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Introduction

The ultimate goal in the clinical field is to acquire the essential skills, so evaluating the clinical skills in these fields becomes particularly important (1). Since the universities of medical sciences have the task of training students to become the dedicated and skilled workforces and clinical training of dental students directly

affects health and treatment of oral and dental diseases in the society, for making the students familiar with the pattern of clinical skills, providing an appropriate condition for their education and improvement (2) and acquiring qualification in practicing clinical skills, time, patience and practice in a proper context are required (3). Competence in the fields such as dentistry is defined as the standard and expected professional behavior the dentist should demonstrate when interacting with the patient in order to perform an independent and unsupervised dental practice (4). This professional behavior is a combination of knowledge, understanding, skills and professional values presented at the same time in the dental practice, in accordance with the state of the health care delivery (5).

The prerequisites for proper delivery of dental care are as follows: Technical and procedural skills, the ability to communicate and to have empathy, adherence to professional ethics, respecting patients' rights, primary and secondary prevention, promotion of oral and dental health by critical and logical thinking, evidence-based practices, comprehensive and team performance and guidance of oral and dental health programs nation-wide in modern dentistry. Therefore, it could be said with certainty that acquiring clinical skills is one of the principle elements of competency in a dentist (4, 5). Moreover, one of the main objectives of dental educational programs is to acquire confidence and competence in providing dental health care services in simulated learning environment. Possessing these characteristics could be indicative of future success in proper delivery of dental healthcare (6, 7).

Therefore, a fundamental question regarding the performance of dental graduates in the health care system still remains for the designers of educational programs of human resources, and that is whether dental graduates have been trained properly in order to reach competence and acquire essential skills to begin independent unsupervised dental practices (8, 9).

Since assessment of the clinical skills is supplementary to the formative assessment methods at the end of the educational period, one of the practical methods for evaluating the skills is to assess students' viewpoints regarding the educational quality of clinical skills in different departments of their educational environment (3, 10).

In a study at Tabriz University of Medical Sciences, an assessment was done regarding the competency level in performing basic clinical procedures as well as the effect of learning opportunities as viewed by the final-year medical students (interns) (1). In another survey conducted at Isfahan University, medical students' satisfaction with different educational aspects including professors' performance, medical equipment, educational methods, number and variety of patients, physical environment and welfare facilities was evaluated (11).

There were also other studies in the field of assessing student clinical skills' training done at Shahre-kord, Qazvin, Isfahan and Shiraz (2009) Universities of Medical Sciences (3, 12-15).

Therefore, this study was conducted at Shiraz School of Dentistry to assess clinical dental education from the students' perspective, with the hope to achieve a higher quality education and to improve students' efficient development of clinical skills.

Methods

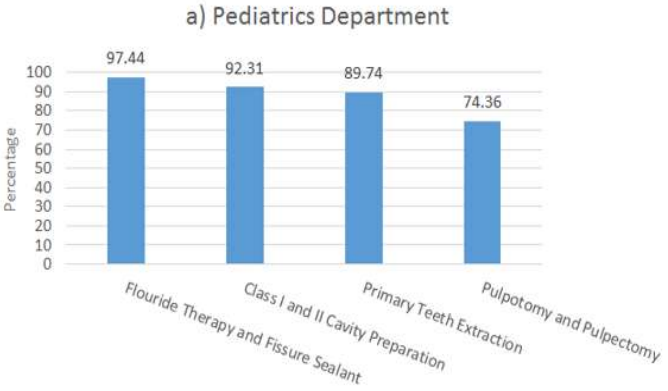
This cross-sectional study was conducted using a self-made questionnaire as a method for data collection, comprising of 140 questions in 4 different forms designed for each of the four dental departments of pediatrics, oral medicine, radiology and orthodontics. There were 41 questions devised for the pediatrics department in order to evaluate the skills for cavity preparation, restoring fractured teeth, extraction of primary teeth, fluoride therapy/ fissure sealant, pulpotomy, pulpectomy, devising space maintainers, root canal therapy of teeth with open apexes and stripping primary teeth. For the departments of oral medicine, there were 34 questions for evaluating skills related to clinical examination of oral mucosa, salivary glands, lymph nodes and Temporo Mandibular Joint (TMJ), the ability to diagnose natural orofacial landmarks and common oral lesions and their treatment, writing consult letters for other specialists, treatment considerations for certain patients and diagnosing and managing odontogenic and non-odontogenic pain. There were 32 questions for the radiology department regarding performing intraoral and extraoral radiographic techniques, radiographic film processing, normal landmark identification in intraoral and extraoral radiographs, diagnosing inflammatory lesions/ cysts/ benign and malignant tumors in the jaws and managing complications such as gagging and stress in patients with mental-retardation and children. There were 33 questions for orthodontics department in order to assess diagnostic skills, treating class I, II, III malocclusions, deep bite, and cross bite, devising different springs/ clasps, cephalometric analysis and diagnostic casts. The questionnaire was designed considering the minimum requirements each final-year dental student is expected to have achieved at the time of graduation. A number of questions were in the form of yes/no (yes=2, no=1) and the rest were numbered 0-4 according to the Likert scale (1= 1-25%, 2= 26-50%, 3= 51-75%, 4=76-100%). The

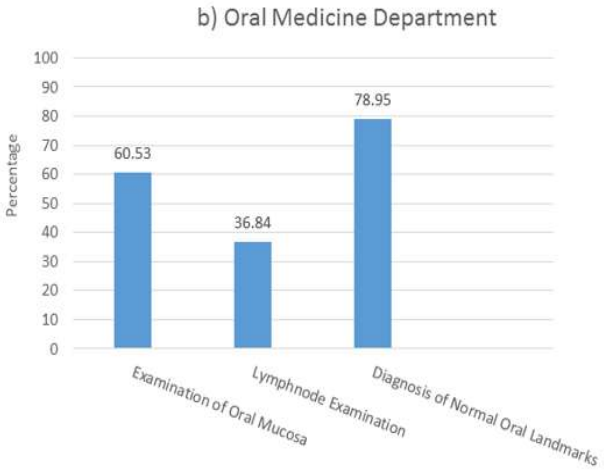
scores were calculated out of a maximum of 4. Each questionnaire contained 3-4 basic skills comprising of 9 questions. The questionnaire was distributed among the final-year dental students (N=50). A total number of 158 completed questionnaires filled by 40 students were entered in our study for evaluation. The required demographic data included the students' age, sex and overall average grade. The questions in the questionnaire were designed to assess the process of education, the learning impact and continuity of the education.

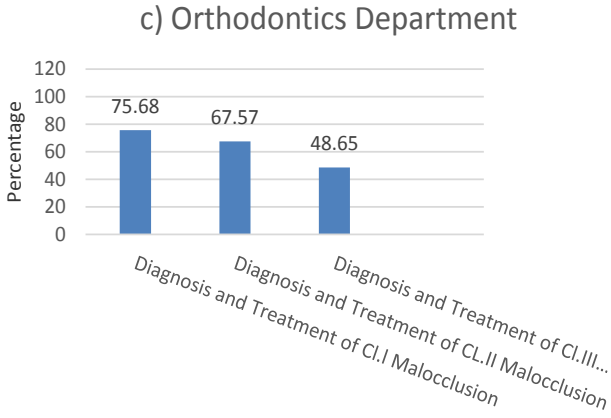
Validity of the questionnaire was confirmed by the tutors, and the reliability was more than 90% (α Chronbach > 90%). After data collection, statistical analysis was done using one-way ANOVA, Pearson correlation coefficient, Tukey test, repeated measures MANOVA and LSD paired comparison test.

Results

The relation between students' overall average grade and the score obtained in each department was assessed using Pearson correlation coefficient. However, no significant correlation was reported (r=0.033, P=0.702,). The average overall score for each department was as follows: Pediatrics department 2.90, radiology department 2.83, orthodontics department 2.77 and oral medicine department 2.17. The statistical analysis using one-way ANOVA and Tukey test showed a significant difference among the scores obtained from different departments. In the previously mentioned departments, the highest scores belonged to class I and II cavity preparation, the developing and fixing of radiographic films, diagnosis and treatment of class I malocclusion and diagnosis of normal intraoral landmarks. The lowest scores were given to pulpotomy/ pulpectomy, performing panoramic technique, diagnosis and treatment of class III malocclusion, examination and diagnosis of normal/ pathologic lymph nodes. In the departments of pediatrics, oral medicine and radiology, tutors' supervision over students work and in the orthodontics department, students' self confidence while performing tasks received the lowest scores. Adequacy of requirements for acquiring necessary clinical skills and the percentage of performing different clinical skills in each of above-mentioned departments are depicted in Figures 1 and 2. However, level of students' theoretical knowledge regarding the practical skills obtained the highest score in all departments.







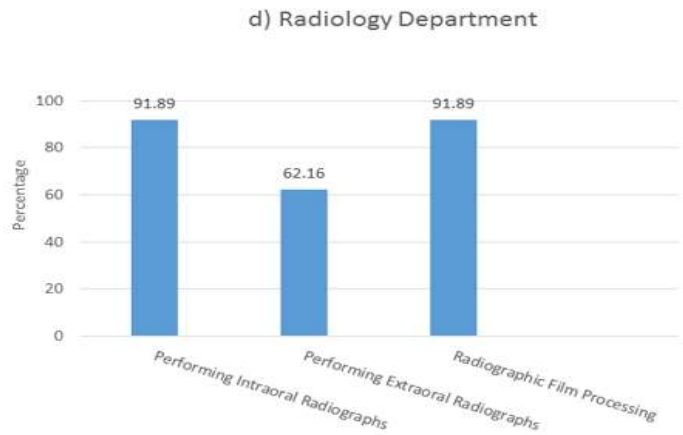
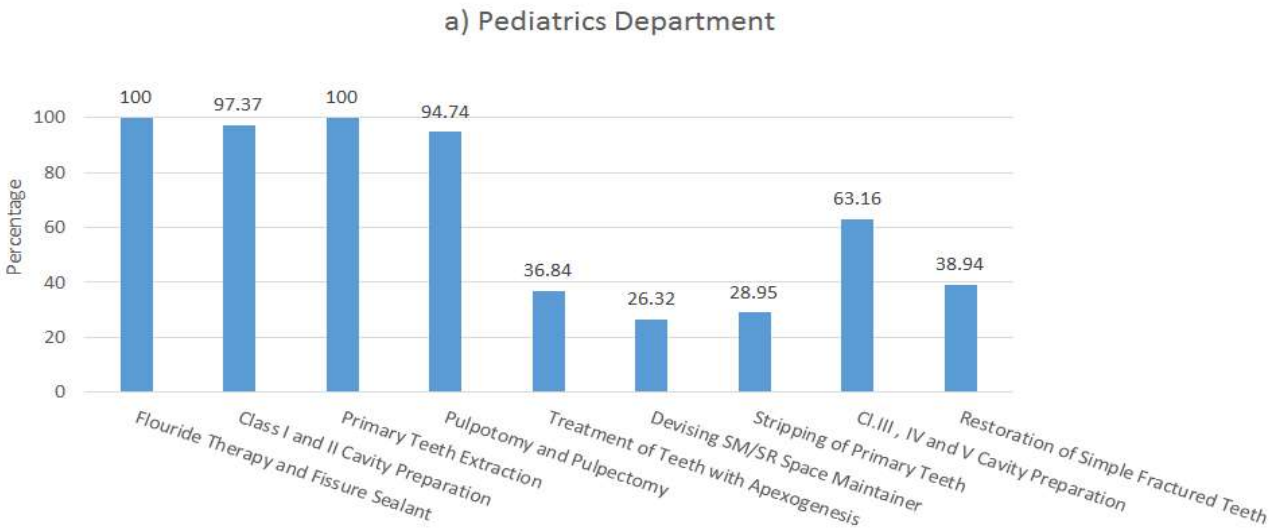
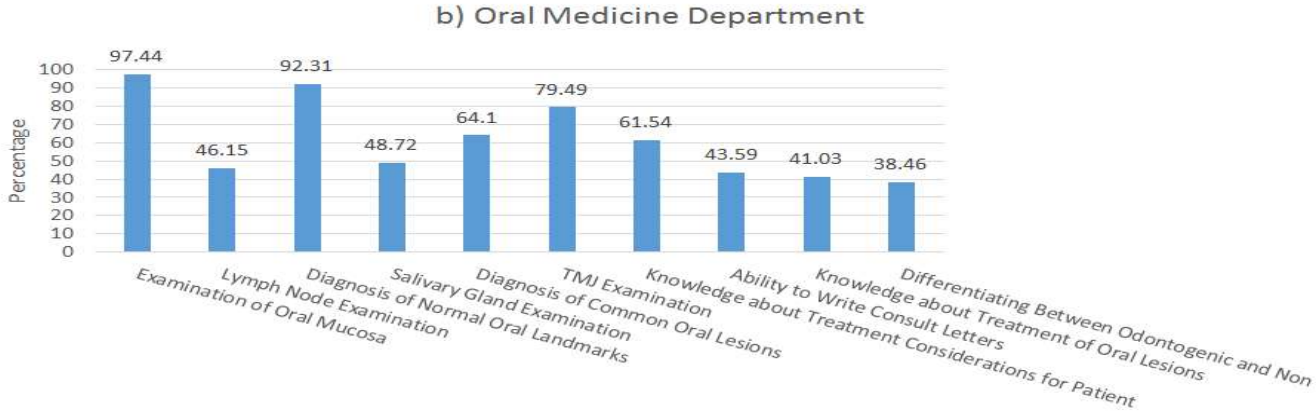


Figure1. Adequacy of requirements for acquiring necessary clinical skills in each department: a) pediatrics, b) oral medicine, c) orthodontics, d) radiology





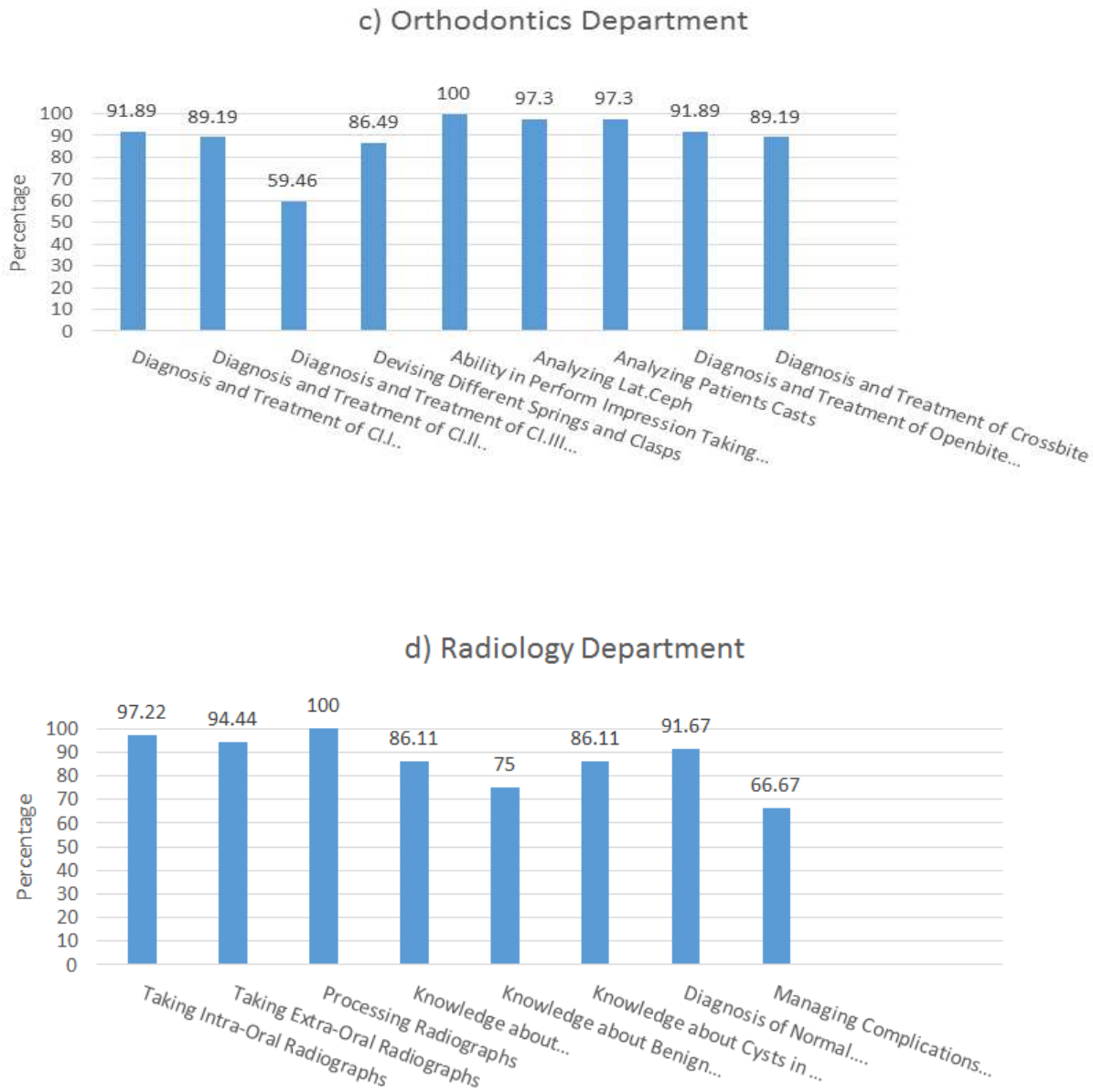


Figure 2. Percentage of performing different clinical skills in each department: a) pediatrics, b) oral medicine, c) orthodontics, d) radiology

Discussion

The findings from this survey revealed that students have properly acquired the core skills being taught in the four departments in our study (pediatrics, orthodontics, radiology and oral medicine) and they have the capability to independently practice these skills after graduation. However, the low scores in certain tasks can be attributed to being complex and time consuming, low prevalence of some cases such as class III malocclusion, difficulty and stressfulness of certain procedures such as pulpectomy, little future application of some skills (e.g. lymph node examination in the oral medicine department), and certain tasks being beyond the curriculum (e.g. taking panoramic radiographs in the radiology department).

Furthermore, there has been effective training regarding most of the none-core practical skills. However, some skills such as fabricating space maintainers and stripping primary teeth in the pediatrics department and treatment of oral lesions, and differentiating odontogenic pain from pains of other origins in the oral medicine department received lower scores, indicating the need for more effective education. The reason for the low scores could

be lack of enough time for adequate practicing, low prevalence of some cases and complexity and difficulty of some skills. These findings are similar to the results obtained from a study conducted by Jabbarifard et al. (2011) at Isfahan School of Dentistry. In his study, the ability of independent delivery of dental services among graduates was reported to be moderate to good (16). Amini et al. at Tabriz University of Medical Sciences and Health Services assessed the Interns' viewpoints regarding their competency level in performing basic clinical procedures as well as the effect of learning opportunities. The results showed that the mean level of general skills was 51.4%. Moreover, the students claimed that they have learnt most of the skills through observation, besides most of them having performed the procedures without direct supervision of teachers or residents (1).

In addition, the satisfaction of medical trainees and interns with different aspects of education, educators performance, medical facilities, training methods, variety and number of the patients, and educational environments at Isfahan University of Medical Sciences was assessed; the results indicated that the highest level of satisfaction was related to outpatient training in health centers, teachers performance, training methods and variety and number of the patients, whereas the medical equipment and facilities had the lowest scores (11). A study conducted by Zamanzad et al. (2005) assessed the satisfaction of medical students with quality of education in clinical courses at Shahre-kord University of Medical Sciences. Students were dissatisfied with inadequacy of proper education in teaching rounds, outpatient clinic and theory courses, in major clerkship periods. In contrast, high rate of satisfaction belonged to morning report programs (12). An investigation at Mashhad University of Medical Sciences evaluated the acquisition of practical skills among medical students. The results revealed that the existing status of medical students' capabilities is far from the optimal situation. This educational deficit was mostly in essential skills and emergency knowledge (3). Azizi assessed the clinical teaching from the viewpoints of residents, interns and trainees of internal departments at Qazvin University of Medical Sciences. According to the results, 72.7% of residents, 67.04% of interns and 63.4% of trainees reported the clinical teaching to be satisfactory (2).

In another study, Amanat et al. (2009) concluded that the highest level of satisfaction was from tutors' and personnels' attitude in the pediatrics and periodontics departments and the lowest level of satisfaction was related to the equipment and facilities from the oral surgery department (13). According to Eslamipour's survey, assessing dental students' satisfaction with clinical departments at Isfahan Dental School, the highest level of student satisfaction belonged to the periodonctics and orthodontics departments whereas the lowest score was given to endodontics and prosthodontics departments (14). Mojabi (2002) also evaluated the dental clinical educational status from the perspective of both the clinical educators and the students at Qazvin University of Medical Sciences. The results showed that almost half of the students reported good performance of the departments of pediatrics, oral diseases, radiology, pathology, and restorative, moderate performance of prosthodontics, oral surgery, endodontics, and periodontics departments, and poor performance of orthodontics department (15).

Poorabbas et al. in 2009 by evaluating the ability of practicing core dental skills among students of Tabriz School of Dentistry reported moderate overall average grade of students' capability. The highest score belonged to preventive dentistry, and in similarity with the current study in which the lowest score was from the department of oral medicine (lymph node examination), the lowest score was from diagnosis of oral diseases (17).

Similar studies, conducted in other countries, showed that graduates were competent only regarding the routine skills (18). However, since these investigations have generally explored all the skills essential to a graduate, the results are different from ours in which only four departments were taken into account.

Gerbert et al. in an investigation on American graduates reported highest capabilities in relation to restorative and preventive skills whereas lowest capabilities were in the field of treating TMJ, diagnosis of orofacial pain, and emergencies in dental office (19, 20).

In a study conducted by Greenwood et al., a comparison was made between two universities of Adelaide and Toronto. In both universities, 67% of the students demonstrated good performance in more than half the activities. The majority were capable of diagnosing patient's problem, performing local anesthesia and performing restorative treatments. However, they weren't skilled enough in time management, performing soft tissue biopsy, and managing dentofacial trauma (21).

Levy et al. conducted a study at faculty of odontology, University of Paris, in which the graduates expressed a desire for more emphasis in emergencies, interpersonal relationship, office management and clinical topics such as fixed prosthodontics, surgery, and periodontics (22).

The results of a study by Benbelaid et al. at the University of Rene Discartes, Paris, pointed out three main

difficulties encountered by undergraduate students during the vocational clinical activity: Time management (90% of the students), administrative matters (85% of the students), and clinical decision-making (80% of the students) (23).

Furthermore, graduates in Australia, France and England claimed to have better performance in the field of diagnosis and restorative dentistry which have been more emphasized in the curriculum. However, they demonstrated less competency in diagnosing oral diseases, treating TMJ problems, orthodontic treatment of malocclusion, and managing emergencies (21-26).

Graduates in England, Canada, France and Norway also expressed weakness in management of emergencies (18, 22, 27, 28).

Conclusion

In conclusion, the findings of this study confirm that students have properly acquired the core and essential clinical skills, and they are capable of performing these skills independently after graduation. However, they have not reached the desired level of competency in none-core skills, so they need to receive more affective education in certain areas.

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