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Assessment of the Clinical Ability of Dental Students in Tooth Extraction at the University of Sulaimani

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ABSTRACT

Introduction: To evaluate undergraduate students' clinical ability to extract teeth, we created a new, coordinated, and quantitative assessment form containing nine items that were required to measure the various skills, using the visual analog scale.

Materials and Methods: A pilot study was performed with 30 students, each of whom was rated by three examiners. In addition, 118 students (59 fourth-year and 59 fifth-year) were reviewed halfway through the year and at their final examinations. The assessment form was then used to evaluate students' abilities for tooth extraction throughout the academic year 2022–2023.

Results: High inter-examiner reliability and a significant association of mean scores ($p<0.001$) between three examiners at the beginning and final of the block for both 4th and 5th students. Both groups showed considerable improvement in their mean scores between the beginning and final examinations. The result shows the association between socio-demographic characteristics of patients treated by fourth and fifth-stage students, (52.54% and 54.24%) of the participants were males in fourth and fifth-stage students respectively. At the same time (47.46% and 45.76%) of the participants were females in fourth and fifth stage students respectively. The age of majority of the participants was more than 30 years old, representing (76.27%), and only (10.17%) were between 25-30 years in fourth stage students, and (8.47%) were between 25-30 years in fifth stage students.

Conclusion: The use of a newly developed assessment scale during tooth extraction offered an objective, standardized, and feasible method for the assessment of clinical skills of undergraduate students for both formative and summative purposes.

Keywords: Dental extraction; Clinical performance; Undergraduate dental students.

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Introduction

Evaluation of a student's performance is a cornerstone of any education process [1]. The evaluation of students in the dentistry curriculum seeks to guarantee that they have picked up the requisite knowledge, clinical skills, and problem-solving abilities. The outcomes of the Assessment should diagnose student strengths and weaknesses and monitor the development of student's performances. Assessment tests the student's ability and measures how successfully and appropriately a teacher is carrying out their duties. It identifies challenges in the teaching process, whether programmatic or curricular [1,2].

Since this process considers all factors that impact the education outcome, a comprehensive perspective on student competency also estimation is an essential requirement for better evaluation of learning at university [3]. The capability of dental students aims to ensure a degree of quality consistent with effective treatment and management path, which the graduating dentist acquires to attain the patient good health [4]. This can be skilled through monitoring evidence-based knowledge, Development of cognitive skills, personal attributes, and interpersonal communication skills [5]. It concurs that ability assessment and the professional profile needed by society are affected by cultural and socioeconomic diversity among communities [4,6].

The graduate student must possess the complex ability of capacity to begin independently and unsupervised in dental practice [7,8]. Dental graduates should be efficient in the basic clinical skill of tooth extraction. To increase competence and deliver high-quality healthcare, extensive assessment of clinical ability requires longitudinal evaluation in the workplace under supervision [9,10]. Various scales, including task-specific checklists and pass/ fail judgments, have been employed to evaluate clinical ability objectively. The evaluation method must be reliable, valid, practical, and have high inter-examiner reliability [8]. The value of several tooth extractions performed by students during undergraduate education warrants further investigation. Given the potential variations in the learning needs of individual students, it has been suggested that setting a minimum target regarding the number of tooth extractions performed by undergraduate dental students before their competency assessment may not be appropriate [19]. Evaluation is an essential skill as it helps students to look at their work with a critical eye, which encourages their judgment skills. It develops decision-making skills and problem-solving thinking abilities [2]. It has been acknowledged that student involvement is an important side of the evaluation process as it enhances better academic learning outcomes. Although the concept is not new, little evidence seems to be available regarding students' perspectives on the education process in dental schools. No study, to the best of my knowledge, has included patients' perspectives toward the learning process in a clinical environment. Furthermore, few documented studies have been conducted to investigate students' perspectives on their learning progress [20]. The College of Dentistry at Sulaimani University is a main dental teaching institute. It provides dental health services for thousands of patients each year, serving a large population in the center of Sulaimani.

Aims of the study:

1. To develop and validate a structured assessment scale for the clinical ability of undergraduate dental students in the extraction of teeth that meet both formative and summative purposes.

2. To compare the clinical scores in the extraction of teeth between fifth- and fourth-year dental students assessed during a full academic year to find a more convenient way of clinical teaching.

3. To evaluate and observe the development of clinical ability to extract teeth in a group of students from both stages between two examinations (beginning and final of the block).

4. To assess the students more accurately and minimize the difference between the supervisor's score which may be affected by personal mood and other factors.

Materials and Methods

The evaluations consist of nine elements that cover each component of a complete case and address various aspects of tooth extraction. A clinical assessment component is intended to qualify and measure student's clinical skills necessary for optimal simple tooth extraction for patients visiting the University of Sulaimani oral and maxillofacial Surgery clinic. Each student will record information regarding the patient's medical history, clinical examination, and diagnosis before the Assessment begins. The local anesthetic's subjective and objective effects are evaluated five minutes after administration. A standardized case sheet was used to assess the 4th and fifth-year students' ability concentrating on fundamental criteria in the oral and maxillofacial department clinic while performing dental extractions [14].

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The sample included 59 fourth, and 59 fifth-year students who were randomly selected to extract the teeth, and 30 students of the fourth and 30 students of the fifth stage were chosen to do the test at starting and end of the clinical oral surgery block, there is no exclusion criteria in this study. The difficulty of extraction is measured on a four-point scale: 1= single-rooted tooth requiring forceps extraction; 2= multirooted tooth requiring forceps extraction; 3= single-rooted tooth requiring forceps and elevator for extraction; and 4= multirooted tooth requiring forceps and elevator for extraction [14]. Each parameter in the evaluation is rated out of 10. A score of less than five for any item is considered poor, a score between 5-7 is considered fair, and a score from 8 to 10 is considered good. The parameters used for assessment of the clinical performance of the students are data collection case sheet, local anesthetic technique, selection of instrument, the position of chair, position of the operator, extraction technique, post-operative instruction and care, infection control, and ethic or behavior of the student [14]. (Figure 1 at the Appendix).

Statistical Analyses

Data entry and statistical evaluations were carried out using SPSS for Windows, version 22.0 (SPSS Inc., NY, and U.S.A.), and presented using Descriptional analysis. The reliability Statistics used were: Cronbach's alpha, Chi-Square Test, Independent samples T-Test, and One-way ANOVA (F-test). According to the standards used to determine the levels of significance, the P-value of ($P<0.001$) was considered to be highly significant, while ($P<0.05$) was considered to be significant, ($P>0.05$) non-significant, and ($P<0.000$) as very highly significant.

Validation study

A Pilot study was conducted to confirm the scale at the oral and maxillofacial surgery clinic through the academic year 2022–2023. The sample included 59 students randomly chosen from the fourth and fifth classes to extract teeth. Three examiners; (one lecturer oral surgeon with a Ph.D. degree and two assistant lecturers' oral surgeons with M.Sc. degree) in the oral and maxillofacial surgery department in the College of Dentistry at the University of Sulaimani were chosen to assess the students according to the criteria for assessment. Every student underwent a thorough evaluation during the case and was monitored by the three examiners independently visually. Following each Assessment, the student was told about their weak points and encouraged to improve their abilities for the future. On the other hand, the evaluation was done by all three examiners to evaluate and grade the student's capability during dental extraction at the starting clinical trial (the student 1st case) and at the end of the oral and maxillofacial clinic time (final exam in one month), and these data were analyzed to find the difference of examiners in their assessment. The parameters used for evaluation of the performance of students to deal with the management of the cases (dental extraction) referenced in (Majeed, 2018) were scored from (1-10), and the difficulty of the cases was graded from (1-4) [14].

Results

The result shows the association between socio-demographic characteristics of patients treated by fourth and fifth-stage students, (52.54% and 54.24%) of the participants were males in the fourth and fifth stage students respectively. At the same time (47.46% and 45.76%) of the participants were females in fourth and fifth stage students respectively. The age of majority of the participants was more than 30 years old, representing (76.27%) of fourth and fifth-stage students respectively, and only (10.17%) were between 25-30 years in fourth stage students, and (8.47%) were between 25-30 years in fifth stage students. In addition, majority of the diagnosis in fifth stage students were retained root reaching (59.32%), while (42.37%) of the diagnosis in fourth stage students were retained root, (13.56% and 8.47%) of the participants had chronic periodontitis in fourth and fifth stage students respectively, (35.59% and 30.51%) of the participants had between 20–30 tooth in fourth and fifth stage students respectively, and also (38.98%) of the participants had more than 30 teeth in fifth stage students, while (32.20%) of the participants in fourth years students had more than 30 teeth, as shown in Table 1. The result indicates that there are statistically significant differences (or associations) between patients treated by fourth and fifth-stage students in diagnosis (p-value=0.000), but there is no statistically significant difference (or association) between patients treated by fourth and fifth-stage students in age, sex, and tooth (p-value>0.05). Regarding the association between clinical performance scores among fourth and fifth-stage students, the data collection case sheet was reported to be poor by (15.25%), Fair by (74.58%) and Good (10.17%) in fourth-stage students. In comparison (6.78%) of the participants were poor, and (86.44%) were fair in the data collection case sheet for fifth-stage students, as shown in Table 2. According to the local anesthetic technique in fourth-stage students, the majority of the participants were fair (72.88%), poor, and good (11.86% and 15.25%)

respectively, and in fifth years students the majority of the participants (77.97%) were fair, and (13.56% and 8.47%) of the participants were good and poor respectively in performing local anesthetic technique. The selection of instruments was fair by (77.97%), good by (11.86%) and poor by (10.17%) in 4th years students, in comparison, in the 5th years students (77.97%) of the participants were fair in the selection of instruments, and (8.47% and 13.56%) of the participants were poor and good respectively. The majority of participants (79.66%) were fair regarding the position of chair, good and poor (8.47% and 11.86%) respectively in fourth years students, whereas in fifth years students the position of chair in the majority of the participants (86.44%) were fair and (3.39% and 10.17) of the participants were poor and good respectively.

Additionally, the position of the operator was fair by (79.66%), good by (10.17%), and poor by (0.17%) in fourth years students, while (5.08%, 79.66%, and 15.25%) of participants were poor, fair, and good respectively in fifth years students. Likewise, the majority of the participants (72.88%) were fair in extraction techniques, and (15.25% and 11.86%) were good and poor respectively in fourth years students, and the extraction technique in the majority of participants (74.58%) were fair and (8.47% and 16.95%) of the participants were poor and good respectively. Regarding the post-operative instructions and care, (33.90%) of participants were good, while the others were fair (64.41%), and poor (1.69%) in the fourth year's students, but in the fifth year's students the majority of participants (55.93%) were fair, and (44.07%) were good. Additionally, in the fourth years students, the majority of participants (52.54%) were fair, poor, and good (45.76% and 1.69) respectively in infection control, but in the fifth year's students the infection control of major participants (74.58%) was fair, and (23.73% and 1.69%) were poor and good respectively. However, the ethics in the majority (55.93%) of participants in fourth-year students were fair, (3.39% and 40.68%) were poor and good respectively. But the majority of participants (52.54%) in fifth-year students were good, and (47.46%) of the participants were fair. This study demonstrates that there are statistically significant differences between the patients treated by fourth and fifth-year students regarding infection control (p-value= 0.041) However, there is no statistically significant difference regarding the data collection case sheet, local anesthetic technique, instrument selection, chair position, operator position, extraction technique, post-operative instructions and care, and ethics.

The result indicates that there are statistically significant differences between fourth and fifth-stage students in the position of the operator (p-value=0.017), but there is no statistically significant difference between fourth and fifth-stage students about the data collection case sheet, local anesthetic technique, selection of instrument, the position of chair, extraction technique, post-operative instructions and care and ethics (p-value>0.05), as showed in Table 3. The comparison of mean scores given by the examiners at the beginning (the student's 1st clinical trial) of the block between examiners for fourth and fifth-stage students in this result indicates that there is a statistically significant difference at the beginning of the block between the examiner (1,2,3) in the selection of instrument (p-value=0.004), the position of the chair (p-value=0.003), the position of the operator (p-value=0.00), post-operative instructions and care (p-value= 0.006) and infection control (p-value=0.000) in fourth years students. While there is a statistically significant difference at the beginning of the block between examiners in local anesthetic technique (p-value=0.015), post-operative instructions and care (p-value=0.000), and infection control (p-value=0.024) in fifth-stage students (p-value<0.05), as shown Table 4.

The comparison mean scores at the end of the block (the student's final exam in one month) between examiners for fourth and fifth-stage students, Table 5 indicates that there are statistically significant differences at the final of the block between the examiners in the local anesthetic technique (p-value =0.002), the position of the operator (p-value =0.041), extraction technique (p-value=0.025) and ethics (p-value-0.042) in fourth stage students because the p-value was less than the standard common alpha 0.05, While, there is a statistically significant difference of final exam between examiners in the selection of instrument (p-value=0.02) in fifth stage students (p-value <0.05). The result indicates that there is a statistically significant difference in the beginning and the final assessment between the examiners in the data collection case sheet (p-value=0.018), local anesthetic technique (p-value=0.004), the position of the chair (p-value=0.000), the position of the operator (p-value=0.000), post-operative instructions and care (p-value=0.011) and infection control (p-value=0.000) in fourth years students. While there is a statistically significant difference between examiners in the data collection case sheet (p-value=0.000), local anesthetic technique (p-value=0.006), selection of instrument (p-value=0.000), the position of the chair (p-value=0.000), the position of the operator (p-val-

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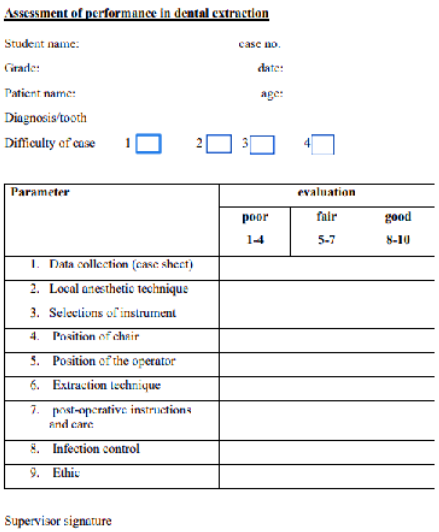
ue=0.000), extraction technique (p-value=0.000), post-operative instructions and care (p-value=0.0000) and Ethics (p-value=0.000) in fifth years students, as shown in Table 6. In Table 7, Cronbach's alpha is used to determine the final reliability result. The information for the question was acquired from the participants' involvement twice to sharpen their responses, and the reliability result was 0.856. The questionnaire's respondents were reliable as a result.



Assessment of performance in dental extraction

Student name: case no.

Grade: date:

Patient name: age:

Diagnosis/tooth

Difficulty of case 1 ☐ 2 ☐ 3 ☐ 4 ☐

Parameter	evaluation		
	poor 1-4	fair 5-7	good 8-10
1. Data collection (case sheet)			
2. Local anesthetic technique 3. Selections of instrument			
4. Position of chair			
5. Position of the operator			
6. Extraction technique			
7. post-operative instructions and care			
8. Infection control			
9. Ethic			

Supervisor signature

Figure 1. The format of the assessment sheet for clinical performance in the study [14].

Table 1. Association between Socio-Demographic characteristics of patients treated by 4th and 5th stage students.

Socio-Demographic	4th stage students		5th stage students		Total		P-value	Result
	Fr.	%	Fr.	%	Fr.	%		
Sex								
Male	31	52.54	32	54.24	63	53.39	0.854	N.S
Female	28	47.46	27	45.76	55	46.61		
Age (years)								
< 25	8	13.56	8	13.56	16	13.56	0.95	N.S
25-30	6	10.17	5	8.47	11	9.32		
> 30	45	76.27	46	77.97	91	77.12		
Mean±S. D	42.92±14.16		43.07±14.46		T=0.058 (p-value=0.954)			
Diagnosis								
Chronic periodontitis	8	13.56	5	8.47	13	11.02	0.000	Sig.
Retained root	25	42.37	0	0.00	25	21.19		
Periodontitis	5	8.47	0	0.00	5	4.24		
Badly carious tooth	9	15.25	0	0.00	9	7.63		
Pre prosthetic purpose	3	5.08	0	0.00	3	2.54		
Retained Root	0	0.00	35	59.32	35	29.66		
Badly carious tooth	0	0.00	8	13.56	8	6.78		
Pre orthodontic extraction	1	1.69	0	0.00	1	0.85		
Unrestorable tooth root canal filled	4	6.78	4	6.78	8	6.78		
Periapical change	0	0.00	1	1.69	1	0.85		
Fractured tooth	0	0.00	2	3.39	2	1.69		
Sound tooth	0	0.00	1	1.69	1	0.85		

Pulp polyp	0	0.00	1	1.69	1	0.85		
Socio-Demographic	4th stage students		5th stage students		Total		P-value	Result
	Fr.	%	Fr.	%	Fr.	%		
Malposed	0	0.00	2	3.39	2	1.69	0.000	Sig.
Irreversible pulpitis	4	6.78	0	0.00	4	3.39		
Non-restorable tooth	8	13.56	5	8.47	13	11.02		
Tooth								
<20	19	32.20	16	27.12	35	29.66	0.313	N. S
20-30	21	35.59	16	27.12	36	30.51		
>30	19	32.20	27	45.76	46	38.98		
Mean±S. D	26.49±11.16		29.37±12.04		T=-1.348		(p-value=0.18)	

Table 2. Comparison between clinical performance scores between 4th and 5th years students.

Clinical performance		4th stage students			T. S (results)	5th stage students			T. S (results)	P-value
		Poor	Fair	Good	56	Poor	Fair	Good		
Data collection case sheet	Fr.	9	44	6	(Poor)	4	51	4	59	0.242
	%	15.25	74.58	10.17		6.78	86.44	6.78	(Fair)	
Local anesthetic technique	Fr.	7	43	9	53	5	46	8	62	0.781
	%	11.86	72.88	15.25	(Poor)	8.47	77.97	13.56	(Fair)	
Selection of instrument	Fr.	6	46	7	53	5	46	8	62	0.924
	%	10.17	77.97	11.86	(Poor)	8.47	77.97	13.56	(Fair)	
Position of chair	Fr.	7	47	5	52	2	51	6	63	0.22
	%	11.86	79.66	8.47	(Poor)	3.39	86.44	10.17	(Fair)	
Position of the operator	Fr.	6	47	6	53	3	47	9	65	0.449
	%	10.17	79.66	10.17	(Poor)	5.08	79.66	15.25	(Fair)	
Extraction technique	Fr.	7	43	9	52	5	44	10	64	0.82
	%	11.86	72.88	15.25	(Poor)	8.47	74.58	16.95	(Fair)	
Post-operative instructions and care	Fr.	1	38	20	78	0	33	26	85	0.344
	%	1.69	64.41	33.90	(Fair)	0.00	55.93	44.07	(Fair)	
Infection control	Fr.	27	31	1	33	14	44	1	46	0.041
	%	45.76	52.54	1.69	(Poor)	23.73	74.58	1.69	(Poor)	
Ethics	Fr.	2	33	24	81	0	28	31	90	0.192
	%	3.39	55.93	40.68	(Fair)	0.00	47.46	52.54	(Good)	

Fr: Frequency, T.S: Total score, (score of poor=0), (score of fair=1) and (score of good=2).
Sample (59) then total score=188, (minimum total score=0) and (maximum total score=188). The scale clinical performance was classified as poor practice (<50%) with a score (of 0 – 58), Fair practice: (50% - <75%) with a score (of 59–87), and good practice (≥75%) with a score (88-188).

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Table 3. Comparison of mean scores of clinical performance scores between 4th and 5th years students.

Clinical performance	4th stage students			5th stage students			T-Test	P-value	Results
	N	Mean	S. D	N	Mean	S. D			
Data collection case sheet	59	6.0169	1.33251	59	6.0339	1.08224	-0.076	0.94	N.S
Local anesthetic technique	59	6.1186	1.27421	59	6.3390	1.13882	-0.99	0.324	N.S
Selection of instrument	59	6.2203	1.13058	59	6.2542	1.15360	-0.161	0.872	N.S
Position of chair	59	5.8475	1.22915	59	6.2373	1.07220	-1.836	0.069	N.S
Position of the operator	59	5.7797	1.23271	59	6.2881	1.05129	-2.411	0.017	Sig.
Extraction technique	59	6.0339	1.24521	59	6.4237	1.17742	-1.747	0.083	N.S
Post-operative instructions and care	59	7.0508	0.89873	59	7.2034	0.90553	-0.918	0.36	N.S
Infection control	59	4.6271	1.03221	59	5.1525	0.97933	-2.836	0.005	Sig.
Ethics	59	7.1356	0.99060	59	7.4068	0.79043	-1.644	0.103	N. S
Total	59	6.0923	0.91930	59	6.3710	0.72085	-1.833	0.069	N. S

Table 4. Comparison of mean scores at the beginning of the block between examiners for 4th and 5th-stage students.

Clinical performance	Examiner	4th stage students		F-Test	P-value	Result	5th stage students		F-Test	P-value	Result
		Mean	S. D				Mean	S. D			
Data collection case sheet	1	6.40	1.28	0.887	0.415	N. S	6.73	0.87	1.725	0.184	N. S
	2	6.57	1.04				6.73	0.72			
	3	6.17	1.18				6.73	1.03			
local anesthetic technique	1	6.60	1.13	2.456	0.092	N. S	7.10	0.76	4.399	0.015	Sig.
	2	6.60	1.16				6.87	1.01			
	3	5.97	1.10				6.40	1.00			
Selection of instrument	1	6.63	1.03	5.895	0.004	Sig.	7.10	0.99	3.589	0.032	N. S
	2	6.80	0.96				6.57	0.94			
	3	5.93	1.11				6.53	0.82			
position of chair	1	6.60	1.07	6.235	0.003	Sig.	6.70	0.99	0.052	0.949	N. S
	2	5.60	1.04				6.63	0.81			
	3	5.80	1.35				6.63	0.96			
position of the operator	1	6.27	1.01	11.985	0.000	Sig.	6.73	0.83	1.062	0.35	Sig.
	2	6.20	1.56				6.47	1.07			
	3	6.73	1.08				6.37	1.10			

Clinical performance	Examiner	4th stage students		F-Test	P-value	Result	5th stage students		F-Test	P-value	Result
		Mean	S. D				Mean	S. D			
extraction technique	1	6.30	1.24	2.981	0.056	N. S	6.37	1.47	0.172	0.842	N. S
	2	6.70	1.34				6.57	0.94			
	3	5.87	1.38				6.47	1.48			
post-operative instructions and care	1	7.17	0.65	5.475	0.006	Sig.	7.57	0.94	9.498	0.000	N. S
	2	6.73	0.98				6.40	1.16			
	3	6.47	0.82				6.97	1.00			
infection control	1	4.33	0.55	9.969	0.000	Sig.	6.50	1.50	3.891	0.024	Sig.
	2	5.77	1.70				5.60	1.00			
	3	5.23	1.25				6.17	1.23			
Ethics	1	7.47	0.68	2.387	0.098	N. S	7.50	0.86	0.833	0.438	N. S
	2	7.13	0.82				7.73	0.74			
	3	7.57	0.90				7.50	0.82			
Total	1	6.40	0.66	0.906	0.408	N. S	6.92	0.42	6.117	0.003	Sig.
	2	6.34	0.66				6.58	0.34			
	3	6.19	0.49				6.60	0.50			

Table 5. Comparison of mean scores of final of block exam between examiner for 4th and 5th years students.

Clinical performance	Examiner	4th stage students		F-Test	P-value	Result	5th stage students		F-Test	P-value	Result
		Mean	S. D				Mean	S. D			
Data collection case sheet	1	6.63	1.10	1.253	0.291	N. S	7.10	0.96	1.658	0.197	N. S
	2	6.67	1.12				6.90	0.92			
	3	7.03	1.03				7.33	0.88			
local anesthetic technique	1	6.43	0.82	6.903	0.002	Sig.	7.23	0.94	0.009	0.991	N. S
	2	6.63	1.16				7.23	1.28			
	3	7.37	1.07				7.20	1.10			
Selection of instrument	1	6.93	0.94	1.528	0.223	N. S	7.70	1.06	4.089	0.02	N. S
	2	6.63	1.03				7.43	0.90			
	3	6.43	1.33				7.00	0.91			
position of chair	1	6.57	0.94	2.997	0.055	N. S	7.37	0.96	0.489	0.615	N. S
	2	7.00	1.02				7.43	0.90			
	3	7.17	0.99				7.20	0.96			
position of the operator	1	6.80	0.85	3.322	0.041	Sig.	7.43	1.01	1.447	0.241	Sig.
	2	7.10	0.99				7.13	0.86			
	3	7.43	1.01				7.00	1.14			
Extraction technique	1	6.13	1.50	3.828	0.025	Sig.	7.00	1.20	1.133	0.327	N. S
	2	6.83	1.09				7.47	1.01			
	3	6.97	1.13				7.20	1.37			

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Clinical performance	Examiner	4th stage students		F-Test	P-value	Result	5th stage students		F-Test	P-value	Result
		Mean	S. D				Mean	S. D			
Post-operative instructions and care	1	6.97	1.10	2.105	0.128	N. S	7.73	0.83	0.428	0.653	N. S
	2	7.47	0.82				7.63	0.89			
	3	7.03	1.13				7.83	0.79			
Infection control	1	6.57	1.17	1.736	0.182	N. S	6.87	1.25	0.048	0.953	Sig.
	2	6.77	1.17				6.80	1.35			
	3	7.13	1.25				6.77	1.19			
Ethics	1	6.97	0.81	3.3	0.042	Sig.	7.60	0.97	0.001	1.001	N. S
	2	7.47	0.78				7.60	0.93			
	3	7.43	0.94				7.60	0.89			
Total	1	6.67	0.47	5.324	0.007	Sig.	7.34	0.53	0.273	0.762	N. S
	2	6.95	0.59				7.29	0.55			
	3	7.11	0.53				7.24	0.49			

Table 6. Comparison of mean scores of the beginning and final of the block examinations between 4th and 5th years students.

Clinical performance	Examiner	4th stage students		F-Test	P-value	Result	5th stage students		F-Test	P-value	Result
		Mean	S. D				Mean	S. D			
Data collection case sheet	beginning	6.38	1.17	-2.378	0.018	Sig.	6.49	0.89	-4.587	0.000	Sig.
	Final	6.78	1.09				7.11	0.93			
local anesthetic technique	beginning	6.32	1.15	-2.927	0.004	Sig.	6.79	0.97	-2.81	0.006	Sig.
	Final	6.81	1.09				7.22	1.10			
Selection of instrument	beginning	6.46	1.09	-1.279	0.203	N. S	6.73	0.95	-4.466	0.000	Sig.
	Final	6.67	1.12				7.38	0.99			
position of chair	beginning	6.00	1.23	-5.457	0.000	Sig.	6.66	0.91	-4.915	0.000	Sig.
	Final	6.91	1.00				7.33	0.94			
position of the operator	beginning	6.07	1.39	-5.837	0.000	Sig.	6.52	1.01	-4.42	0.000	Sig.
	Final	7.11	0.98				7.19	1.02			
Extraction technique	beginning	6.29	13.35	-1.804	0.073	N. S	6.47	1.31	-4.027	0.000	Sig.
	Final	6.24	1.39				7.22	1.21			
Post-operative instructions and care	beginning	6.79	0.87	-2.572	0.011	Sig.	6.98	1.13	-5.104	0.000	Sig.
	Final	7.16	1.04				7.73	0.83			

Clinical performance	Examiner	4th stage students		F-Test	P-value	Result	5th stage students		F-Test	P-value	Result
		Mean	S. D				Mean	S. D			
Infection control	beginning	5.11	1.38	-8.871	0.000	Sig.	6.09	1.30	-3.789	0.000	Sig.
	Final	6.82	1.20				6.81	1.25			
Ethics	beginning	7.39	0.82	0.798	0.426	N. S	7.58	0.81	-1.172	0.862	N. S
	Final	7.29	0.86				7.60	0.92			
Total	beginning	6.31	0.61	-6.87	0.000	Sig.	6.70	0.45	-8.11	0.000	Sig.
	Final	6.91	0.56				7.29	0.52			

Table 7. Cronbach's alpha Reliability Statistic.

Method	Result	Sample
Alpha Cronbach	0.856	118

Discussion

The ability to extract teeth often involves a variety of clinical skills that should be incorporated into the evaluation, and the assessment of undergraduate dental students can be mediated by a longitudinal assessment or a structured, clinical, objective test [11]. The longitudinal Assessment may be a more reliable source of data for assessing student's abilities than single evaluations, which may collect erroneous examples of the examiner's mood [1]. For developmental purposes, a longitudinal assessment has been used over one academic year. To our knowledge, no analogous studies of students' capacity to extract a tooth have been published in our city. In the fourth and fifth years of study in dental colleges, the student starts their clinical practice in different dental specialties. They become in direct contact with patients as they deliver dental care under clinical supervision.

This type of training is unique to dental schools [12]. In Sulaimani city, dental health care is provided through public (governmental) health sectors. Dental health services are provided in dental schools (subsidized for the aim of dental learning). The public health sector includes primary healthcare centers, this sector does not provide all dental services, and it seems it cannot compensate for increasing demands for required dental services. The quality of service provided in dental schools should be better than in the public sector, but unfortunately, the students were not at the level of our expectations, which showed in our result in Table 2 in general, although the number of outpatients increased annually which may be due to better service in our college and low cost of the treatment plan, and increased number of the students each year, with dropping of the economic status of the community, furthermore waiting time influence the patient satisfaction toward university dental clinic. The results, in Table 2, showed the fourth-stage students' performance was poor in the data collection case sheet, selection of instruments, the position of the chair, position of the operator, extraction technique, and infection control, while the fifth-stage student performance was better and this may be due to their (fourth stage) first time contacting with the patient and lack of practice on patient preclinically. This agrees with Redford et al, 2018, which stated that interpersonal communication and patient management cannot be successfully replicated in the laboratory. there may however be merit in preclinical assessment where students are introduced to the concept of the competency exercise on several micro-skills such as patient and operator positioning and the correct selection and application of instruments [21].

The involvement of patients in student evaluation could shed light on different aspects of their management skills. This helps the clinical instructor to evaluate not only the technical skills in performing oral surgical procedures but also helps to inform the clinical instructor about the overall level of clinical and communication skills [13]. Comparing the scores of abilities between fourth and fifth-year students revealed no significant differences (as shown in Table 3) in the majority of the items addressed, a finding that may be attributed to the variability of clinical skills among the students, as well as the fact that the number

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of patients who required dental extraction was insufficient to demonstrate noticeable differences in competence between the two groups, or might be related to several factors such as the limited number of cases that have been taken by fifth stage students in the previous year (defect in the system or negligence of students) or variability in the intelligence between the students. To establish competence, performance success measured by longitudinal evaluation in many situations may be needed [14,15]. Because oral surgery is a complex field in which there are different approaches to treating patients with the same conditions, and it is acceptable for three examiners to have different treatment ideas and approaches,

Table 5 shows the statistical significance between some parameters of clinical performance administered by all three examiners for both stages, the reason for that may be because mood and personality of the examiners are different and missing of some points visually by some examiner at that moment. This can be solved by constructing a perfect assessment form that can focus on all the positive and negative points of the student during clinical training to reduce conflict points between different examiners. Regarding the student's personalities and the progress of their skills over the academic year, the scores of both groups have significantly increased between the initial and final examinations. As shown in Table 6; this statement that the students who should have improved their achievement levels after receiving constructive feedback from examiners and repeating the process more than one time before the final exam was in agreement with Majeed 2018.

However the result in this study showed non-significant in ethics and attitude examination, with p-values=0.426, and 0.862 for the fourth stage and fifth stage respectively (Table 6), this could be because any students during the examination, especially with three supervisors, tried to be in a perfect attitude all time despite the reality that they may be in a stressful condition, also their dealing with a limited number of patients had an impact on their developing attitude toward advancing. Another point may be due to the small sample of students that may not reflect the difference in their behavior in managing patients, especially in uncommon environments [22]. It's possible that the respondent's first attempt to conceal her ignorance in a particular field was motivated by her original attitude of indifference. A student's growth or self-confidence might be undermined by expectations about what peers and instructors will think of them, or what is commonly referred to as constructive criticism. Thus, the desire to evaluate oneself may be hampered by a lack of confidence in their abilities [23]. In place of the previous system of daily clinical grading, the new evaluation scale provided an unbiased, consistent, and accurate score that might improve clinical decisions on student's abilities. Researchers have discovered that daily evaluations were skewed and barely distinguished between students and that they did not correspond well with assessments made during competence exams for each student throughout an academic year [15,16]. The belief is that the integration of assessment standards and scoring procedures between routine tooth extractions and comprehensive clinical examinations could strengthen this link. Instead of the random judgment of students by examiners, the arbitrary impacts must be directed [17].

In fact, it might be difficult to overcome this impact; however, adding more examiners for each student will solve and average their final scores. Students should be evaluated by multiple examiners instead of a single examiner to avoid unfairness as supported by Wass et.al 2001 [18]. To assist students' progress to the next phase of the learning continuum, instructors must provide constructive criticism and encouragement. Students can progress toward being fair judges through the supportive impacts of their instructors' advice, a great deal of practice, trial and error, and progressively positive outcomes. Regular chances to apply critical thinking and evaluate issues arising from patient care support the development of skills that enable the conscious competent to depend less on guidance from the teacher and more on her own judgment [22]. The limitation of the present study is the entire dependence of assessment on the examiners and possible personal bias. Although the examiners were randomly allocated to students, potential pitfalls (in particular the "halo effect" by which higher ratings are given to students who are "liked" by the assessor) should be considered. However, this effect is difficult to avoid in practice, but it can be neutralized by increasing the number of examiners for each student and taking their mean as the final score. In the department, the use of at least two examiners is a regular policy during major clinical examinations.

Conclusion

The result of the study stated that most of the students were not in a good level of performance, so dental schools must ensure that students receive the required pre-clinical training and are fairly evaluat-

ed before they perform tooth extractions on patients. Since the assessments may be standardized and student performance can be evaluated in a risk-free environment, teaching and evaluating competency in tooth extractions is typically easier in a virtual environment. There was no significant difference in clinical performance parameters between 4th and 5th stage students, therefore it would be better for 4th stage students to take more cases and have more requirements while for 5th stage students should take more complicated cases and more research should be done which takes bigger samples to reveal that. The thesis showed that there is a statistical significance difference between some parameters of clinical performance administered by all three examiners for both stages in the beginning and final of the block, therefore each student must be supervised by more than one examiner to be fairly evaluated and the assessment form must be yearly updated to overcome weak points, and the bigger sample researches should be performed to reveal more precise results and solutions.

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Conflict of Interest

There is no conflict of interest to declare.

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