

Dental Students Perception Towards Changes Implemented in Clinical Teaching Strategies of Conservative Dentistry and Endodontics

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Abstract

To investigate fifth year dental students perception towards changes carried out to Conservative Dentistry course; an increase in session duration from 2 hours to 3 hours and the ability to perform any procedure in the scope of conservative dentistry.

A structured online questionnaire was developed using the online platform Google Forms. The questionnaire contained nine items divided into two main themes. The first theme investigated the change of session duration from 2 to 3 hours, while the second theme investigated the ability to perform any procedure in the scope of conservative dentistry. A final question evaluated the overall satisfaction in regards to the changes implemented. Collected data were imported into SPSS.

The overall number of respondents to the questionnaire was 69.7 %. 58.1% of the students reported a 3-hours session was better than a 2-hours session, whereas, 97.7% of the students reported being able to work any procedure in the scope of conservative dentistry was better than being limited to a specific procedure. 3.9% of students reported being highly satisfied, 14.7% being moderately satisfied, 41.9% being satisfied, 29.5% being not satisfied, and 10.1% reported being not satisfied at all. Changes did not have an effect on students grades.

Although the implemented changes were generally looked upon favorably and satisfactorily by students, they were not sufficient to cause an impact on their performance or grades. Other factors, such as number of clinical sessions, availability of patients and reduction of competencies and requirements, have to be investigated.

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Introduction

The American Dental Education Association (ADEA) has recognized, many years ago, that dental education is an evolving, dynamic process that strives to remain current and best serve the dental community in large and dental patients in particular.¹ Dental educators strive to educate the future dental workforce to demonstrate strong psychomotor and critical thinking skills. In addition, the faculty endeavor to develop lifelong learners who will use those skills to improve and maintain their patients' oral and systemic health. Dental schools strive to provide excellent patient-centered care in an environment that is educationally sound and efficient.^{2,3}

Clinical education comprises a major component of students' dental education. According to an American Dental Association (ADA) report, U.S. dental schools in 2010-11 devoted 76% of their total curricular hours to clinical sciences education.⁴

The University of Jordan (UJ) was founded in 1962, while the dental school was established in 1982 with the main aim of "Improving Dental Healthcare By Forming Outstanding Dentists & Conducting Advanced Research". A 2014 visit from the Association for Dental Education in Europe (ADEE) to the dental School resulted in being recognized by the ADEE to maintain European standards in dental education, with a curriculum in agreement with European guidelines.⁵ Currently, UJ Dentistry includes a dental (D.D.S.) program with approximately 1200 students, as well as graduate programs (M.Sc. and residency) with approximately forty students. Our 99-chair dental department, located at the University Hospital,

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accommodates dental students providing clinical patient care.⁶

Educational institutions are usually vulnerable to international and domestic economic climate changes, which compels them to carry out certain measures in an attempt to combat financial constraints. Some U.S. dental schools have modified their clinical curricular models or created new models in an effort to improve financial productivity and enhance patient-centered care.⁴ Other schools raised tuitions and patient treatment fees 5% to 10% each year over a decade and expanded class size. In addition, many schools reduced the number of full-time faculty members relative to the number of students and underinvested in their physical plant and infrastructure. Unfortunately, these trends have the potential to degrade the quality of education provided.² Our dental school was no exception; while the first batch of dental graduates, whom graduated in 1989, were around 40 in number, currently there are 200 fifth year dental students anticipated to graduate in June 2019. This approximate five-fold increase in students numbers led to the ADEE 2014 visit report to conclude the following "The lack of space and the difficulties in maintaining the facilities to accommodate the growing number of students is the major obstacle that is hindering the maximization of the potential benefit of the undergraduate teaching".⁵

At UJ dental school, 30 credit hours (out of a total 195 credit hours taught in 5 years) are taught in the final fifth undergraduate year. Conservative Dentistry-5 Practical, being a major subject, weighs 6 credit hours. Three major components are taught in this clinical module; fixed prosthodontics, operative dentistry and endodontics. As a consequence of the increase of students intake throughout the years, a reduction of number and duration of clinical sessions in this particular module was carried out, which, therefore, led to a reduction in clinical training and patient contact hours. In addition, students in any session are divided so as to perform either an endodontic procedure, a fixed prosthodontics procedure or an operative dental procedure. Students are compelled to only carry out a specific procedures and for any reason if the case is not indicated then they can't perform any other procedure.

This eventually led to students dissatisfaction, and calls for change. Last year,

the conservative dentistry department approved to implement two major changes; an increase in session duration from 2 into 3 hours and to allow students to perform any conservative or endodontics procedures within their designated clinical sessions by providing the needed supervisors to supervise their work.

This study aims to investigate fifth year dental students opinions and satisfaction to changes carried out to Conservative Dentistry-5 Practical course; the increase in session duration from 2 hours to 3 hours and having the ability to perform any procedure in the scope of conservative dentistry.

Materials and methods

A structured online questionnaire (appendix 1) was developed using the online platform Google Forms (Google Docs). The Research Ethics Committee at the School of Dentistry at the University of Jordan reviewed the survey and granted approval to proceed. The questionnaire, designed to evaluate opinions and satisfaction towards implemented changes, was completed anonymously and voluntarily by fifth year dental students at the end of the academic year. To maintain the anonymity, no personal identifiers were used in the online questionnaire.

The questionnaire contained nine items divided into two main themes. The first theme, which investigated the change of session duration from 2 to 3 hours, was made up of 4 questions. It evaluated if the student felt that this change was better or not and then investigated the reasons behind the answer (more than one possible answer). The second theme, which investigated the ability to perform any procedure in the scope of conservative dentistry, was also made up of 4 questions. It evaluated if the student felt that this change was better or not and then investigated the reasons behind the answer (more than one possible answer). A final question evaluated their overall satisfaction in regards to the changes implemented. In addition to choosing what they felt was the appropriate response(s) to each question, two open-ended questions, numbers 4 and 8, were designed to encourage students to record any comments, suggestions or observations.

The questionnaire was first pilot tested for clarity and content among a group of 10 students, and also to ensure that the questions could be

answered quickly and easily. After input was received from the pilot test population, the form was emailed to all fifth year dental students. Students email addresses were obtained from the dental school administration records. The survey was open online for 2 months. A single reminder was sent after a month. No compensation or incentives were offered.

The collected data were imported into the IBM Statistical Package for the Social Sciences (SPSS), version 24 (IBM Corp., Armonk, NY, USA) and were statistically analyzed for significance using chi-square cross-tabulation tests. Statistical analysis was carried to the 0.05 level of significance.

APPENDIX 1

CONS TEACHING SURVEY

This questionnaire aims to evaluate opinions and attitudes of fifth year students to the recent changes carried out in the clinical training of conservative dentistry and endodontics. The two main changes being a 3-hours session instead of the previous 2-hours session and the ability to carry out any conservative procedure during the session and not bound to a specific procedure.

1. Do you think that a 3 hours session is better than a 2 hours session?

- Yes
- No

2. If you feel that a 3 hours session is better, why is that? (please tick more than one box if applicable).

- More time to work.
- Less stress.
- Able to finish the whole procedure or most of it in the same session
- I can do more than one procedure in a session.
- If patient is late, does not show up or the case is not indicated I still have time to look for another patient.
- Instructors will have more time to supervise and guide me through the clinical procedure.

3. If you feel that a 3 hours session is not better, why is that? (please tick more than one box if applicable).

- If patient does not show up or the case is

not indicated I might lose 3 hours of clinical training.

- Patient gets tired and can't stay for 3 hours.
- 3 hours session means less numbers of sessions, so less number of tutors supervising me.
- If I miss the session for a reason, such as being sick or have exams, I would lose 3 hours of clinical training.
- If I am carrying out a simple or short procedure, this means most of the session time might get wasted.

4. Do you have any suggestions in this matter?

5. Do you think being able to work any procedure you want in the scope of conservative dentistry is better than being limited to a specific procedure is better?

- Yes
- No

6. If you think being able to work any procedure is better, why is that? (please tick more than one box if applicable)

- Will be able to freely do any conservative procedure so won't miss a session.
- Being able to choose a procedure means being able to choose my supervisor.

7. If you think being able to work any procedure is not better, why is that? (please tick more than one box if applicable)

- Might not have prepared all the instruments for the procedure.
- Will have to carry all my instruments for all procedures to the session.
- Might not be fully aware of the theoretical knowledge of the procedure that I will attempt.
- My supervisor might ask about the theoretical knowledge of the procedure that I will attempt without having the chance to revise it.

8. Do you have any suggestions in this matter?

9. How do you overall rate your satisfaction in the changes done to clinical conservative dentistry and endodontics subject?

- HIGHLY SATISFIED
- MODERETLY SATISFIED
- SATISAFIED
- NOT SATISFIED
- NOT SATISFIED AT ALL

Results

The overall number of respondents to the questionnaire was 129 out of 185 students (69.7 %). Regarding the first part (table 1), whether a 3-hours session was better than a 2-hours session, 75 (58.1%) of the students reported it was better, whereas, 54 (41.9%) reported otherwise. This difference was not statistically significant ($p=0.064$).

Out of those 75 students, 64 (85.3%) reported it gave them more time to work (statistically significant $p<0.001$), 53 (70.7%) reported it would make them able to finish the whole procedure or most of it in the same session (statistically significant $p<0.001$), 60 (80%) reported that Instructors will *not* have more time to supervise and guide them through the clinical procedure (statistically significant $p<0.001$), and 48 (64%) reported that there will *not* be less stress (statistically significant $p=0.015$).

In addition, out of the same 75 students, 39 (52%) reported that they *cannot* do more than one procedure in a session (not statistically significant), and 40 (53.3%) reported If the patient is late, does not show up or the case is not indicated they *won't* have time to look for another patient (not statistically significant).

On the other hand, out of the 54 students, 51 (94.4%) reported If the patient does not show up or the case is not indicated they might lose 3 hours of clinical training (statistically significant $p<0.001$), 35 (64.8%) reported that patient gets tired and can't stay for 3 hours (statistically significant $p=0.029$), 37 (68.5%) reported that a 3-hours session means less numbers of sessions, so less number of tutors supervising them (statistically significant $p=0.006$), 35 (64.8%) reported that If they miss a session for a reason such as being sick or have exams, they would lose 3 hours of clinical training (statistically significant $p=0.029$), and 44 (81.5%) reported that If they are carrying out a simple or short procedure, this means most of the session time might get wasted (statistically significant $p<0.001$).

Looking into the second part of the questionnaire (table 2), whether being able to work any procedure in the scope of conservative dentistry is better than being limited to a specific procedure, 126 (97.7%) of the students reported it was better, whereas, 3 (2.3%) reported

otherwise. This difference was statistically significant ($p<0.001$).

Out of those 126 students, 123 (97.6%) reported they will be able to freely do any conservative procedure, so won't miss a session (statistically significant $p<0.001$), and 76 (60.8%) reported being able to choose a procedure means being able to choose their supervisor (statistically significant $p<0.001$).

On the other hand, as only 3 students reported that being able to work any procedure in the scope of conservative dentistry is *not* better than being limited to a specific procedure, no statistical analysis was done to investigate reasons behind it.

3-hours session was better than a 2-hours session					
Yes 75 (58.1%)			No 54 (41.9%)		
	Yes	No		Yes	No
more time to work	64 (85.3%)	11 (14.7%)	If the patient does not show up or the case is not indicated they might lose 3 hours of clinical training	51 (94.4%)	3 (5.6%)
able to finish the whole procedure or most of it in the same session	53 (70.7%)	22 (29.3%)	patient gets tired and can't stay for 3 hours	35 (64.8%)	19 (35.2%)
Instructors will have more time to supervise and guide them through the clinical procedure	15 (20%)	60 (80%)	a 3-hours session means less numbers of sessions, so less number of tutors supervising them	37 (68.5%)	17 (31.5%)
there will be less stress	27 (36%)	48 (64%)	If they miss a session for a reason such as being sick or have exams, they would lose 3 hours of clinical training	35 (64.8%)	19 (35.2%)
Can do more than one procedure in a session	36 (48%)	39 (52%)	If they are carrying out a simple or short procedure, this means most of the session time might get wasted	44 (81.5%)	10 (18.5%)
If the patient is late, does not show up or the case is not indicated they would have time to look for another patient	35 (46.7%)	40 (53.3%)			

Table 1. Students' opinion regarding whether a 3-hours session was better than a 2-hours session.

Being able to work any procedure in the scope of conservative dentistry is better than being limited to a specific procedure					
Yes 126 (97.7%)			No 3 (2.3%)		
	Yes	No		Yes	No
able to freely do any conservative procedure, so won't miss a session*	123 (97.6%)	2 (1.6%)	Might not have prepared all the instruments for the procedure	2 (66.7%)	1 (33.3%)
able to choose a procedure means being able to choose their supervisor*	76 (60.3%)	49 (38.9%)	Will have to carry all my instruments for all procedures to the session	0 (0%)	3 (100%)
			Might not be fully aware of the theoretical knowledge of the procedure that I will attempt	2 (66.7%)	1 (33.3%)
			My supervisor might ask about the theoretical knowledge of the procedure that I will attempt without having the chance to revise it	1 (33.3%)	2 (66.7%)

Table 2. Students' opinion regarding being able to work any procedure in the scope of conservative dentistry is better than being limited to a specific procedure.

*One student of the 126 did not respond to this item.

Finally, regarding the overall satisfaction of the changes done, 5 students (3.9%) reported

being highly satisfied, 19 students (14.7%) reported being moderately satisfied, 54 students (41.9%) reported being satisfied, 38 students (29.5%) reported being not satisfied, and 13 students (10.1%) reported being not satisfied at all. For statistical analysis purposes, satisfaction categories were combined (78 students (60.5%)) and non-satisfaction categories combined (51 students (39.5%)). The difference was statistically significant ($p < 0.001$).

Discussion

The primary goal of any dental school is to produce health care professionals, whom are able to address the dental needs of any community, in addition, to being competent to innovate, adapt, and respond to any changing demographics and requirements of the dental patient population.³The dental school educational journey is a stressful time for students.⁷Students entering dental programs must acquire a certain amount of learning in order to graduate and become successful novice dentists,⁸they must learn how to provide comprehensive, patient-centered care, which, requires a positive clinical learning atmosphere in which students feel respected and patients feel valued. Optimally, there is a seamless integration of behavioral science and professionalism skills that are taught and modeled by faculty members in the clinics.²However, both pessimists and optimists agree that the rising cost of dental education is having its toll on quality of dental education provided, and time has come for measures to be undertaken to address this urgent issue.²

This survey study was carried out on the (2017/2018) batch of fifth year students as they were taught in their fourth year under the previous regulations and at fifth year under the current regulations. This deemed them to be suitable for the study as they should be able to judge and evaluate both regulations and provide a reliable opinion about it.

Online structured and executed surveys and questionnaires are gaining popularity within the scientific community. Many online sites, such as Survey Monkey, Qualtrics and Google Forms, provide the services of creating and conducting such questionnaires. Being user friendly, easy to perform, fast and free of charge led to their widespread. In addition, some readily provide basic statistics and percentages analysis. Within

the dental scientific literature many studies have been found to employ this tool. It has been used to evaluate various aspects of dental education such as to assess the quality of life of dental students,⁷teaching methods of paediatric caries management,⁹teaching of posterior composite,¹⁰dental students class lecture attendance, use of online resources, and performance,¹¹infection control teaching,¹²predoctoral clinical endodontic education,¹³ the use of virtual patients in dental education,¹⁴effects of a case-based education courses on dental students,¹⁵methods and purposes for conducting students course evaluations,¹⁶and assess educational training needs of dental educators,¹⁷and students' motivation to pursue dentistry.¹⁸

In addition, it has been used for other dental related aspects such as for the frequency of rubber dam use in endodontic treatments,¹⁹to explore consumer awareness of the WHO guidelines in relation to sugar intakes,²⁰predict oral cancer screening behavior,²¹ and extent of rotary endodontic files usage²² and effectiveness of teaching dental implant science on dental student's knowledge.²³

The response rate of 69.7% was an acceptable rate. Regarding the first part of the questionnaire, although 58.1% of the respondents thought that a 3 hours session was better than a 2 hours session, the difference was not statistically significant. This came as a surprise. It was generally thought that this change will be overwhelmingly approved and supported by the students. Even though students did acknowledge that this will provide them with more time to work and would be able to finish most of or the whole dental procedure in a single session, they reported that their supervisors won't have more time to supervise and guide them and stress won't be less. Also, they were concerned of losing a whole 3 hours session if case is not indicated or patient did not show up. In addition, students main apprehension regarding the increase in session duration was that it would mean there won't be an increase in the number of sessions. This was very evident in their remarks to the first open-ended question. Students were also concerned about the lack of any breaks in between session, as they won't have the extra time to prepare and send their instruments to sterilization and would have to do so using time out of their sessions. In addition, they preferred a reduction in the number of

competencies and minimum requirements that they need to finish to successfully pass the module. One student suggested to reduce new students intake to be able to provide more sessions for current students.

In respect to the second part, 97.6% agreed that being able to carry out any procedure in the scope of conservative dentistry is better than being limited to a specific procedure. This result was anticipated. This will reduce the number of unproductive sessions and being able to choose their supervisor was a clear advantage. Responses and comments to the second open-ended question were more positive and showed that these decisions were highly regarded by students, as one of the students regarded it as a perfect decision and best taken within that academic year.

Despite students concerns, 60.5% of them revealed their satisfaction of the changes implemented. Although the percentage was lower than expected, it was relieving to the department and dental school administration. An obvious advantage of the changes was the 50% reduction in number of students whom did not finish the required competencies and minimum requirements. Usually these students spend an extra 4 weeks of clinical training after the academic year terminates to attain the needed tasks to graduate.

Students' final grades of this module for this year batch and for the previous year batch were compared to investigate if these changes were reflected on their grades. The 2017 batch were 130 students, their mean score was 62%, with 33% being the lowest score and 84% the highest. Surprisingly, this was almost identical to the 2018 batch, whom had a mean score of 61.65%, the lowest score was 38% while the highest was 84%. This lack of reflection might be attributed to other economical factors that the educational process is suffering from such as limited number of dental chairs, shortage of materials and equipment. In addition, the increase in number of students has an effect on the availability of patients, which may prevent students from acquiring the necessary skills and competencies within the limited time for training to develop into confident qualified practitioners.²³ Another contributing factor might be the small and slow pace increase in number of full time clinical faculty staff, which is surprising, given the large and fast pace increase in student

enrollment.² Further studies are needed to gain a better understanding of the impact of these factors on the performance of students and practitioners.

Conclusions

Considering the limitations of this survey, the investigators concluded that, although, the implemented changes were generally looked upon favorably and satisfactorily by students, they were not sufficient to cause an impact on their performance or grades. Other factors, such as number of clinical sessions, availability of patients and reduction of competencies and requirements, have to be investigated. In addition, the need to find alternative means to improve the financial status of the dental school, besides the increase of students intake, is paramount.

Declaration of Interest

All authors state that they have no conflict of interest.

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