

Students' perspectives and views toward a comprehensive based model of teaching: Confidence, effectiveness and challenges

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Abstract

Background The holistic methodology in education has been widely appreciated and implicated in dental schools in the last decade. Our department of conservative dentistry decided to reform the educational model of teaching from a traditional requirement-based model to a hybrid model incorporating comprehensive care treatment. The aim of our study was to assess students' confidence and perspectives regarding the benefits of a comprehensive model of teaching.

Methods A questionnaire was distributed at the end of the scholastic year 2018-2019 and designed to investigate students' opinions on the benefits of the new model of teaching as well as difficulties encountered and possible shortcomings. In addition, self-perceived confidence level was assessed for purpose of comparison between their confidence in supervised tasks versus confidence during comprehensive case treatment.

Results Completed responses were gathered from 127 students out of 202 giving a response rate of 63%. The majority of students believed that comprehensive cases allowed them to better address patients' needs, gives higher satisfaction, positively influences self-confidence, permits greater exposure to clinical skills/techniques and enhances reasoning and analytical skills. However, their confidence was still lower in comprehensive case management when compared to supervised tasks.

Conclusions Our students showed an appreciation of the comprehensive care model. Self-learning and didactic skills were enhanced. It would therefore be beneficial to adapt this methodology to earlier years and other disciplines, to enhance the effectiveness of education and achievement of learning outcomes.

Background

Academic dental institutions vary in their pedagogical systems from the traditional methods where students are asked to complete a certain number of tasks to more interactive ones such as problem or case-based learning [1, 2, 3] competency-based curricula [4], group discussions, e-modules, and comprehensive dental care [5]. Furthermore, trends such as outreach teaching experiences and community dental care have proved to be a useful adjunct to meet the increasing demand for well-trained graduates [6]. All these new educational systems have shown to enhance achievement, acquisition of knowledge, and student professional development [7, 8, 9].

In the last decade comprehensive educational approaches have received great attention in both medical and dental academic fields [10]. Most of dental schools have felt the need and importance to change their model of teaching from a subject specific approach to a more holistic approach that results in an evidence-based quality of oral health care. From one view, it enables students to look upon the greater image of treating patients and not to focus on one precise problem. As opposed to "student centered approach" patients' needs are met, and health care is provided in a proper sequential method.

Our faculty has been recognized by the Association for Dental Education in Europe (ADEE) to have European standards of dental education with a curriculum in agreement with EU guidelines. The feedback from the committee, stressed on the idea of having both vertical and horizontal integration. After revisiting our dental curriculum, opinions started shifting toward adopting a more holistic way of thinking for our students. In our institute, these prevailing philosophies could not have been applied in their pure form due to restraints such as the large number of students. Nevertheless, changes were introduced by incorporating the management of comprehensive dental cases in our restorative curriculum. In theory, dental schools are no longer required to provide total learning environment [11], so we contemplated that these changes would encourage students to practice self-assessment and self-learning resulting in a positive educational outcome. Still, from our belief that certain skills are necessary to be attained to a competent level, a mix between varied philosophies of teaching was adopted.

Dental educators are faced with challenges related to the evolution and continuous change inherent to the profession. Most dental schools follow methods of assessment which are mainly competency based [12]. Generally, their learning outcomes are achieved by students completing a number of basic tasks unassisted and to a competent level. At our dental school the curriculum of restorative dentistry is divided into preclinical teaching at third year and clinical sessions at the level of fourth and fifth year. Previously our clinical courses were solely requirement based, where students had a designated number of tasks to finish prior to graduation. In accordance with the reforms in dental education seen worldwide, the comprehensive based learning was implemented many years ago and in different forms, with the aim of enhancing the dental education to produce practitioners who are able to think independently and critically to manage patients' problems and adapt to future changes. Our system might be considered a hybrid system, for students are still asked to accomplish certain individualized tasks, yet they must perform treatment of multi-disciplinary cases and present them by the end of the year. In such a setting, students will be encouraged to develop not only in their clinical and intellectual skills but allow them to become independent, self-directed, life-long learners.

When evaluating the success of any dental program, stakeholders at different levels, including students [5], staff as well as patients must be provided with the ultimate benefit of this program [13]. Furthermore, the intended learning outcomes must be met. The aim of this study was to investigate the students' opinions on benefits and challenges of a comprehensive case-based course and give us a better understanding of how they viewed and valued the experience. Additionally, the study will give us insight on student perceived confidence levels in different clinical settings, supervised compared to unsupervised contexts. These findings will enable us to address shortcomings of the curriculum and help us establish new reforms to improve both structure and didactic organization for the purpose of graduating competent and confident dentists.

Methods

Data Collection

At the end of scholastic year 2018–2019, all fifth year DDS students (N = 202) were invited to complete a course evaluation E-questionnaire (Qualtrics \circledR) before their final examinations. The data represented student self-reported achieved level of confidence since the questionnaire was delivered at the end of the year. The questionnaire was anonymous, and students were informed verbally about the questionnaire in order to optimize the number of respondents.

The questionnaire consisted of different parts. The first section investigated general level of student confidence for supervised tasks, compared to confidence level when treating comprehensive cases. Students confidence was reported on a five-point scale (1 = extremely not confident, 2 = not confident, 3 = somehow confident, 4 = confident, 5 = extremely confident).

The second section aimed to get a perspective of students experience and attitudes toward the implication of comprehensive cases in the restorative curriculum. Multiple key points such as benefits, skills acquired, and work stress were addressed, and students' responses were rated on a five-point Likert scale (5 = strongly agree, 4 = somewhat agree, 3 = neither agree nor disagree, 2 = somewhat disagree, 1 = strongly disagree).

Finally, students were asked about difficulties encountered during the year that could have affected their progress, engagement or achievement of intended learning outcomes of the course, such as lack of adequate time, or patient and staff related issues.

Data Analysis

Validation of the questionnaire was done by asking 10 of the students to complete the questionnaire prior to the distribution. Data were recorded using the statistical package for social sciences SPSS Statistics 23 (IBM; Armonk, NY) (SPSS v14). A Pearson chi-squared test was used for comparison and $p < 0.05$ was set as a statistically significant level.

Results

One hundred twenty-seven students responded to the questionnaire, giving a response rate of 63% of which (76%) were females. All participants answered the questions with no records of missing data.

Perceived confidence in comprehensive cases compared to supervised tasks

In both clinical settings, more than half of the students reported being either extremely confident or confident in performing their tasks (supervised 83%, comprehensive cases 58%). Table 1 shows students' perceived confidence level was lower when treating comprehensive cases compared to their confidence when performing completely supervised clinical procedures ($p < 0.05$).

Table 1
Students self-perceived confidence level in different clinical settings.

Clinical Task	Extremely confident	Confident	Somehow confident	Not confident	Extremely not confident
Supervised tasks	33%	50%	15%	2%	0
Comprehensive case management	12%	46%	36%	6%	0

On the other hand, the number of students reporting being *somehow confident* seemed significantly higher in comprehensive case management compared to supervised tasks ($p < 0.05$).

Perception and attitudes toward the comprehensive case learning experience

Students were asked about their views of comprehensive case management and the impact of it beholds on their satisfaction, confidence, acquired skills/knowledge, perceived stress and patients' needs as shown in Table 2.

Table 2
Views of students regarding the comprehensive case experience, level of stress, satisfaction and confidence.

Criterion	Number of students				
	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Better address patients' chief complaint and general needs	43	52	10	13	9
Offers less work stress	3	6	8	39	71
Allows greater exposure to clinical techniques & better clinical experience	41	49	19	11	7
Enhances reasoning/analysis and problem-solving skills	44	62	13	6	2
Positively influence your confidence	39	51	24	6	7
Gives higher satisfaction	63	41	14	3	6

In order to better understand the variation in the students' responses to the preference questions, the responses were collapsed into three categories, by grouping the numbers of students who reported strongly agree with agree as well as disagree with strongly disagree. Figure 1 shows that 75% of our students agreed that the comprehensive case experience allowed them to better address patients' needs. Furthermore, they reported that it enhanced both their didactic (84%) and clinical skills (71%). Majority

also stated that it gave them higher satisfaction (82%) and enhanced their self-confidence (71%). On the other hand, 87% of the students seemed to view this experience as being a stressful experience.

Students' reported challenges

Students were asked to treat their cases in a proper sequential timely manner, while documenting each step and performing follow-up after completion of the treatment. When they were asked about the difficulties they encountered during the various stages of treatment, 74% reported lack of time as a handicap, 57% reported problems with patient drop out and 41% mentioned problems related to staff supervision.

Discussion

The holistic approach in dental education has multiple advantages, through this philosophy of teaching, all aspects associated with disease are taken into account when diagnosing and implementing treatment. This is one reason why this approach has been universally embraced. On the other hand, this pathway allows students to gain management skills and decision-making aptitudes in a problem-based learning approach. Another strength point is the student's exposure to real life situations which they will encounter in their future career [12]. This methodology also has been shown to increase student confidence in clinical reasoning, problem solving and creativeness [7] which reflects positively on their performance and relationship with their patients [14].

From another aspect, competencies designed by experts, are necessary skills that represent the backbone to guide the development of curriculum content, student assessment and accreditation. Similarly, competency-based education has been suggested to improve, critical thinking and autonomy [8], while embracing knowledge and confidence as well. Nevertheless, the holistic approach in dental education cannot always be practiced in its full conception due to inherent institutional constraints. Our current curriculum may be described as a hybrid one, since it includes competencies related to operative, endodontics and fixed prosthodontic subspecialties, as well as comprehensive care treatments performed in a multidisciplinary line.

For such an approach to succeed all aspect of educational environment must be well contemplated and properly planned. Therefore, to identify the difficulties associated with the implication of this model and for the purpose of adopting improvement methodologies, we gathered students input at the end of the scholastic year. As primary stakeholder, their perception of the quality of education and feedback is valuable [15]. When asked about the struggles encountered, the students referred to patients' commitment, time and staff related issues as impeding the true benefit of comprehensive based education. From one view, the contributing role of teaching staff is of utmost importance for the success of educational programs [16], however, the variability in educational experience or differences in methods of teaching [17] might have afflicted the aspired result. To overcome this matter, we set regular rotations to establish some sense of consistency and to allow students to be exposed to different learning

experiences [18]. A true calibration of teachers must also be provided, so that students can make the best out of this experience. Furthermore, assigning mentors to small group of students might prove efficient for the purpose of sustainability of treatment planning and student achievement as has been shown by other studies [18]. As for the second statement regarding lack of time, this might be overcome by reducing number of secondary competencies and allowing our students to designate more time, knowledge and efforts for the treatment of comprehensive cases. One study in University of Bergen, revealed that the holistic approach did not improve student's satisfaction with teaching [10]. Their student comments were related to the teaching staff numbers, commitment as well as lack of calibration regarding evaluation strategies.

In this study we can expect that a true appreciation and judgement of this teaching method was achieved by our students. The reason is that the student sample who answered the questionnaire were exposed to both educational teaching models. In fourth year, their curriculum consisted of a competency and requirement-based course. In fifth year additionally to the former, students were asked to perform management of comprehensive cases, which encompassed integrated disciplines such as periodontics, endodontics and prosthodontics. Nevertheless, it would be speculative to assume that the comprehensive case treatments resulted in a positive impact on students from every aspect. In our study, not all students seemed certain of the benefit of this teaching method. As simple as it may seem, selection of cases is primordial for success. Research has linked multiple attributes to the effectiveness of clinical cases such as relevance, realism, engaging and possessing challenging topics [3]. Our student cases were widely diverse from simple operative work, single crown placement or single rooted endodontic treatment, to more complex cases with fixed bridges and multi-rooted endodontic treatments.

At the end of the scholastic year when students were asked to present and discuss their cases, we noticed perceptible improvement in their communication skills. Moreover, majority of our students agreed that this approach resulted in more diverse clinical exposure and enhanced their intellectual skills. This positive impact on the achievements of intended learning outcomes was reinforced by the fact that students were motivated in every step of the treatment and spend time analyzing and perfecting their management. A similar survey performed by the University of Tennessee following a transition from a departmental model to a comprehensive model, revealed that their students had a clear preference for the comprehensive care model yet only half them thought that this model was less stressful [18], which was also noticed in our students feedback.

It makes intuitive sense that students would feel more confident in the tasks they have practiced frequently or when being supervised [19]. However, one question that is constantly raised is whether the perceived need for assistance is justified or not. Most of our students are accustomed to working in an instructor-based environment. Our results demonstrated that students felt less confidence during comprehensive case management than when performing supervised tasks. This is somehow comprehensible since students probably feel great responsibility and have a constant motif to achieve the highest standards of treatment for their cases, especially that they are asked at the end of the year to present their final work in front of a jury of staff members. Building up students' self-esteem should be

one of the primordial outcomes to develop [20]. Contemporary evidence has shown that different teaching methods such as outreach experience can have a positive effect on student confidence [21].

As witnessed in many other schools, the delivery of modern evidence-based approaches is not without challenges [21]. Nonetheless, dental schools should be active in reviewing and modifying their curricula [12]. Hence, from our belief that traditional teaching methods are outdated and lacking attributes necessary for student development our philosophy was to establish, even if partly speaking, a new curriculum that is outcome based and encourages integrated learning in a stress-free environment where students feel that they belong [22]. Although our school is located in the capital, recruitment of the “right patient at the right time for the right student”, as simple as it might seem, is not evident. Demographics and referral protocols with the augmenting number of students make it a difficult process. Yet, within the capacity and feasibility of our institute, future trends in curricular change and innovation are warranted. In order to sustain a contemporary model of teaching, case scenario discussions to enrich students critical thinking might form a useful adjunct. In addition, interdisciplinary education revolving around themes and not specific points would be highly advantageous.

We acknowledge the fact that surveys are capable of measuring perception of benefit from students’ aspect but are inadequate for assessing actual skill acquisition and further studies related to student productivity when using this educational system are indispensable. Another restriction is that our study reported the students’ perception for one discipline which was restorative dentistry. This approach once adopted in other dental disciplines might demonstrate different outcomes. Furthermore, our system was not a pure comprehensive model as it is more of a hybrid system where competencies and requirement are still existing.

Conclusions

This study gave us insight on the prospective of using a comprehensive care model of education. In general, students confirmed our hypothesis that the comprehensive model provides great benefits in terms of clinical experience and intellectual skills. These results showed the student satisfaction that would drive us to go further in this transition to a complete holistic approach and a true integration between disciplines. This should become our top priority in the future. One way to achieve this is to invest in resources needed to accomplish these changes and to develop staff skills in new technologies and evaluation strategies.

Declarations

Ethics approval and consent to participate

This study was reviewed and approved by the Institutional Review Board/Deanship of Scientific Research of the University of Jordan (Ref # 18/2020/49 and 19/2020/49). The introduction of the questionnaire defined the purpose and objectives of the study. The authors also stated clearly that participation is

completely voluntary with no penalties associated with refusal or withdrawal from participation. Consent was implied by responding to the questionnaire.

Consent for publication

Not applicable.

Availability of data and materials

All data generated or analysed during this study are included in this published article.

Competing interests

There were no financial or professional interests that affected the study.

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Authors' contributions

SH was involved in designing the study and writing the manuscript. AA prepared the questionnaire and validated the survey. SA performed data analysis and statistics. SAG reviewed and corrected the final version. MH participated in designing the questions of the survey and interpretation of data. All authors have read and approved the final version of the manuscript.

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Figures

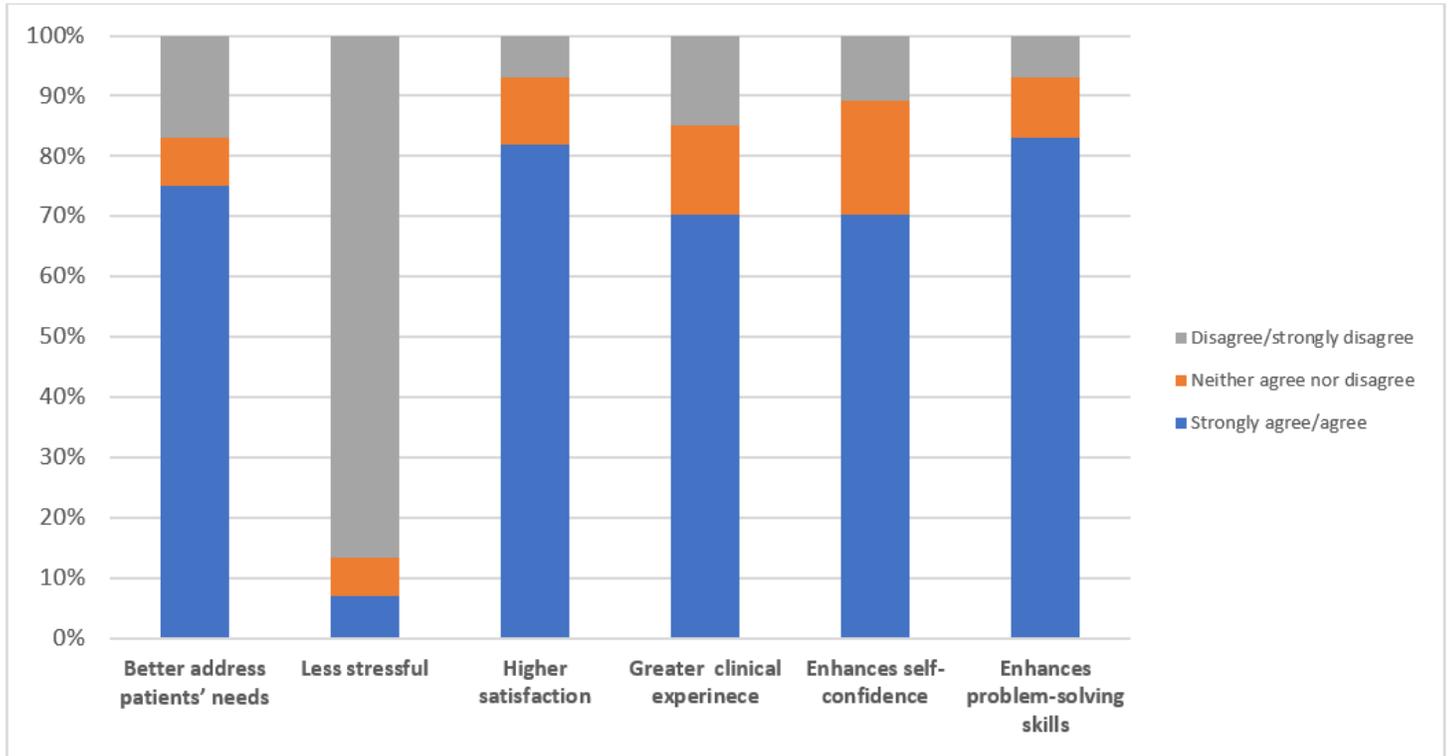


Figure 1

Percentages of students' responses regarding benefits of comprehensive case experience