

Paradigm Transition from the “Department Model” to the “Comprehensive Dental Care” Teaching Model

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Abstract

Background

This study aimed to assess students' perceptions of the gains and challenges of the patient-centered comprehensive care methodology of dental clinical training.

Methods

Self-administered questionnaires were completed by 58 out of 93 students following the end of the academic term 2017–2018.

Results

Most of the students 43 (74%) understood the philosophy behind a holistic approach to patients' dental care and employing a multidisciplinary style. Students' self-assessment showed significant preponderance 41 (71%) ($P = 0.026$) concerning treatment phases and procedural abilities as well as enhancement of their oral rehabilitation case presentations 50 (86%) ($P = 0.0001$). Half of the students were not able understand what they needed to work on from their daily continuous clinical assessment grades. The comprehensive dental care (CDC) concept helped them gain more confidence 44 (76%) ($P = 0.005$) and although students benefited from the interaction with specialists and peers the main advantage was having fixed mentors throughout the year ($P = 0.000$).

Conclusions

The results, besides highlighting the benefits, also address some of the shortcomings of the comprehensive care curriculum especially when it comes to grading. Consequently, there is a need for standardized and regular calibration exercises for clinical tutors (general practitioners) and specialists to enable them to impart consistent information to clinical graduates. It is also necessary for students to receive sufficient feedback on their assessment grades to help them understand and improve upon their deficiencies.

Background

The comprehensive dental care (CDC) teaching methodology provides dental graduates with a platform to comprehend the evidence-based knowledge and clinical skills required to provide and maintain optimal oral health in patients.^{1,2} Through the application of the CDC model, dental students are expected to gain competence in formulating risk-based diagnoses and preventive management approaches for oral care, taking into consideration the patients' overall health.

Several dental schools worldwide have implemented CDC models.³⁻⁵ The College of Dental Medicine at the University of Sharjah has a five-year Bachelor of Dental Surgery (BDS) program. Heretofore, the structural organization of undergraduate clinics at the College of Dental Medicine, University of Sharjah, worked on the dental discipline model approach. Each of the four dental disciplines (endodontic, prosthodontic, periodontics, and operative) were scheduled on specified days, and supervised by specialists in each of these disciplines. Accordingly, students devised their patients' treatment plans as per the advice of the assigned specialist; these were procedure-focused treatment plans, based on a segmented patient care approach instead of a patient-centered holistic oral care approach. This is the reason our school made a transition to the comprehensive care model in the 2017-18 academic year.

Final year students were divided into four clinical practice groups, with each group consisting of six pairs of students (one student practiced while the other assisted) and each group was led by a practice coordinator (mentors-general practitioner) (Fig. 1).

Students were asked to devise a thorough treatment plan for their respective patients, under the supervision of their assigned mentor. In line with the interdisciplinary teaching approach, we attempted to prepare our students to provide patient care in a collaborative team setting. Hence, relevant specialists were called in for consultations at the treatment planning stages for providing procedural direction and chairside assistance and approving befitting care outcomes (Fig. 2).

Similar to other healthcare training facilities across the United Arab Emirates, most of our clinical faculty are internationally trained; consequently, it was understood that there would be a difference in their treatment philosophies. Therefore, to unify the clinical training methodology used, their teaching approaches were standardized and calibrated. Day-to-day clinical assessments were added to the electronic health record system (axiUm by Exan) while mentors' and students' feedback was recorded in Task Stream—an electronic portfolio system used for the collection, evaluation, and preservation of author/student work at our university. The mentees self-assessed their case progress every week, while mentors remarked on the students' weaknesses and strengths. Mentors also provided strategies to improve the students' patient-management skills. Additionally, the "Oral Rehabilitation Case Presentation" helped emphasize the benefits of a holistic approach to patient care in comparison to fragmented-treatment approaches (Fig. 3).

Thus, we aimed to investigate students' reflection on the benefits and challenges of a comprehensive case-based course and to assess the students' experience of using the CDC model. Consequently, the students' perspectives would enable us to address the curriculum's shortcomings and implement improvements to help create competent and confident dental graduates.

Materials And Methods

Students' perspective and experience of transition from a traditional department-centered clinical teaching model to a comprehensive-care teaching model were assessed through a self-administered

questionnaire. Following the final theory exam of the academic year (2018), students (N = 93) enrolled in the graduating year were invited to participate in the study. The questionnaire investigated four topics—students' understanding of the concept of patient-centered CDC, continuity of care, attained clinical skills, and student satisfaction and proficiency in comprehensive patient care.

This questionnaire was tested in a pilot study that included eight randomly selected students to ensure students' understanding of the questions.

Participants in this study read the information sheet that detailed the intent and objectives of the administered survey, with a clear statement that students' participation is voluntary, with no consequences tied to refusal of participation. Students' responses were anonymous and were kept confidential. Consent was inferred from their willingness to respond to the questionnaire.

Students' understanding of the concept of CDC, continuity of care, clinical proficiency, and satisfaction achieved, as well as students' perception of multiple vital points, such as benefits of day-to-day continuous clinical assessment and interaction with mentors and specialists were also assessed on a three-point scale (3 = significant gain, 2 = moderate gain, 1 = slight/no gain).

Entered data were statistically analyzed using XLSTAT (XLSTAT 2020.3, Addinsoft, USA). Qualitative data were presented as numbers with percentages. The statistical analysis of differences in great/significant gain versus moderate/slight/no gain reported by students was performed using the Pearson chi-squared test. Statistical significance was set at $P \leq 0.05$, with a 95% confidence interval.

Results

Sixty-three out of 93 students of the graduating batch answered the questionnaire, but due to missing data, surveys of 5 students were not included, making the total sample size 58.

A statistically significant number of the students, 43 (74%) ($P = 0.000$), were able to comprehend the holistic method of oral care, which employed a multidisciplinary approach to formulate treatment plans. (Table 1).

Table 1

Students' reflection on the patient-centered comprehensive care dental clinical training format

Patient-centered comprehensive care	Great/Significant gain	Moderate/Slight/No gain	P value
	n (%)	n (%)	
<i>Understanding the concept of CDC:</i>			
Concept of providing comprehensive dental care to patients	43 (74)	15 (26)	0.000*
Carry out investigative procedures	39 (67)	19 (33)	0.063
<i>Attained clinical skills:</i>			
Treatment Planning	45 (78)	13 (22)	0.003*
Phasing of treatment	45 (78)	13 (22)	0.003*
<i>Impact on attitude:</i>			
Enthusiasm	29 (50)	29 (50)	1
Confidence	44 (76)	14 (24)	0.005*
<i>Integration of learning:</i>			
Treatment plan and treatment itself	41 (71)	17 (29)	0.026*
Applying what they have learned to oral rehabilitation case presentations	50 (86)	8 (14)	0.000*
<i>Help with Learning:</i>			
Continuous clinical assessment	29 (50)	29 (50)	1
<i>Individual learning support in clinics:</i>			
Interacting with specialists	39 (67)	19 (33)	0.063
Working with fixed mentors	56 (97)	2 (3)	0.000*
Working with peers in clinics	37 (64)	21 (36)	0.137

* $P < 0.05$, Pearson's χ^2 test

Even though most of the students 39 (67%) understood the necessity to carry out all investigative procedures (medical charting, dental charting occlusal analysis, study casts) before formulating a comprehensive treatment plan, this was non-significant ($P = 0.063$).

Forty-five students (78%) felt that their treatment planning skills and phasing of treatment improved significantly ($P = 0.003$). Even though the concept of CDC did not instill much enthusiasm it did manage to significantly increase confidence in ability to treat cases in most students 44 (76%) ($P = 0.005$). Half of

the students were not able understand what they needed to work on from their daily continuous clinical assessment grades.

Many students, 41 (71%) (P = 0.026) were better able to integrate treatment planning and treatment itself and to apply what they have learned to their oral rehabilitation case presentations 50 (86%) (P = 0.0001). Students felt some gain of interacting with specialists and working with their peers but the most significant gain for students was having fixed mentors throughout the year. (P = 0.000)

Discussion

Dental schools worldwide have been actively reviewing, modifying, and implementing evidence-based, patient-centered, comprehensive care curricula, encouraging integrated learning methods.^{1, 3, 4, 6, 7} The comprehensive care planning method places the patient at the center of all oral and dental treatment considerations, factoring-in their medical and dental health status.⁸ In medical and dental education, patient-centered, comprehensive care methodology has proven to be beneficial, as it allows students to gain clinical management and decision-making skills in a problem-based learning style.^{1, 9, 10} The trainee's patient-care experience is expanded upon by handling real-life cases that will be encountered throughout their careers. Thus, instilling in students the integral philosophy of a well-rounded approach to diagnosis, executing treatment, and holistic patient care.

This study is based on a final year cohort of students who experienced a hybrid model education system, as their fourth-year curriculum encompassed requirement-based and specialist care models. During their fifth (final) year of clinical training, the trainees were exposed to the CDC philosophy, involving integrated dental disciplines, such as periodontics, operative dentistry, prosthodontics, and endodontics. Hence, as the students experienced both approaches of clinical education, their responses most likely reflect a genuine assessment. In the present study, we observed a preponderance of a positive understanding of the concept behind the multidisciplinary approach for comprehensive oral care.

Oral rehabilitation using a multidisciplinary format has been previously advocated to enhance critical thinking and confidence in treating challenging cases.¹¹ Accordingly, the mandatory requirement of completing two comprehensive cases of oral rehabilitation in our dental program conceivably offers trainees the potential to expand their clinical knowledge and skills. It also facilitates the establishment of ethics and professionalism in delivering holistic patient care through an evidence-based interdisciplinary approach.

Clinical instructors play a pivotal role in accomplishing the required competencies in any dental educational curriculum.^{7, 12} In the present study, the variability in the teaching approaches of the specialists seemed to have influenced the students' perception of the CDC methodology. In concordance with our findings, a report from the University of Bergen reported that merely following a comprehensive care model does not seem to enrich student knowledge and contentment with teaching.¹³ The teaching staff members' knowledge, commitment, and calibration, concerning teaching and evaluation strategies,

contribute to the success of the CDC paradigm.¹² For prevailing over this aspect of inconsistencies, routine rotations of specialists is important as it may allow maximum student exposure to varied learning experiences. Additionally, the clinical supervisors' regular and routine calibration is warranted, with the aim that graduates can make the best out of this practice.

Executing a patient-centered practice approach in undergraduate clinical training assures the best possible holistic oral health care standards for overall patient satisfaction and well-being.¹⁴ The concept of Comprehensive Dental Care was well understood by the majority of students and it helped them improve their skills in treatment planning and phasing, as well as increase their confidence. Hence, the responses related to the holistic care approach indicate that clinical courses focused on patient care continuity maintain productivity and do not need students to only focus on grades.¹

Furthermore, graded evaluation and oral defense of their oral rehabilitation case presentations in front of a panel of supervising specialists instill in trainee clinicians a greater sense of responsibility and motivation to devise the best treatment plan and provide standard care to their patients. The CDC model platform offers students time and opportunity to execute the most appropriate treatment plan for each specific patient to ensure optimal quality oral health care. Consequently, this builds up students' confidence in patient management skills, which is one of the primary desirable outcomes in graduates.¹⁵

Students' responses indicate that routine case-related discussion, evaluation, and feedback from mentors and specialists were useful and enhanced their critical thinking and case management skills. This leads us to believe that students feel more assured and confident in the tasks they have routinely shadowed and been advised upon. Thus, enhanced self-esteem of students is an important outcome that in turn enhances their patient management skills. It is also necessary that mentors and specialists provide sufficient feedback on their assessment grades to help students understand and improve upon their deficiencies.

The present study has a limitation, in that it uses a "non-validated" questionnaire. Here, we also acknowledge that surveys can measure views of gain or no gains from students' perspective but are inefficient for measuring real clinical acumen achieved by the students with a comprehensive care model.

Conclusion

This study presented an insight into the comprehensive oral-healthcare teaching model that has the necessary attributes for developing a patient-centered, holistic oral-care approach in dental graduates. Our results highlight student satisfaction with a multidisciplinary approach in their clinical training; this should lead us to work further in our transition from a department model to a comprehensive care model with an integration between different dental disciplines. However, there is a profound need to initiate regular calibration exercises that ensure a standardized teaching approach and adequate instructors' feedback to improve student learning.

Abbreviations

CDC Comprehensive Dental Care

BDS Bachelor of Dental Surgery

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from then Research Ethics Committee (REC) of the University of Sharjah (REC-21-03-10-01) and verbal consent was obtained from the participants at the beginning of the study.

Authors' contributions

NK, AH designed the study. AH and AM helped with data collection. NK, AH and MA helped to analyze and interpret the data. NK was a major contributor to the write-up of the manuscript. MA, AH and AM contributed to the writing and reviewing of the submitted manuscript. The authors read and approved the final manuscript.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Figures

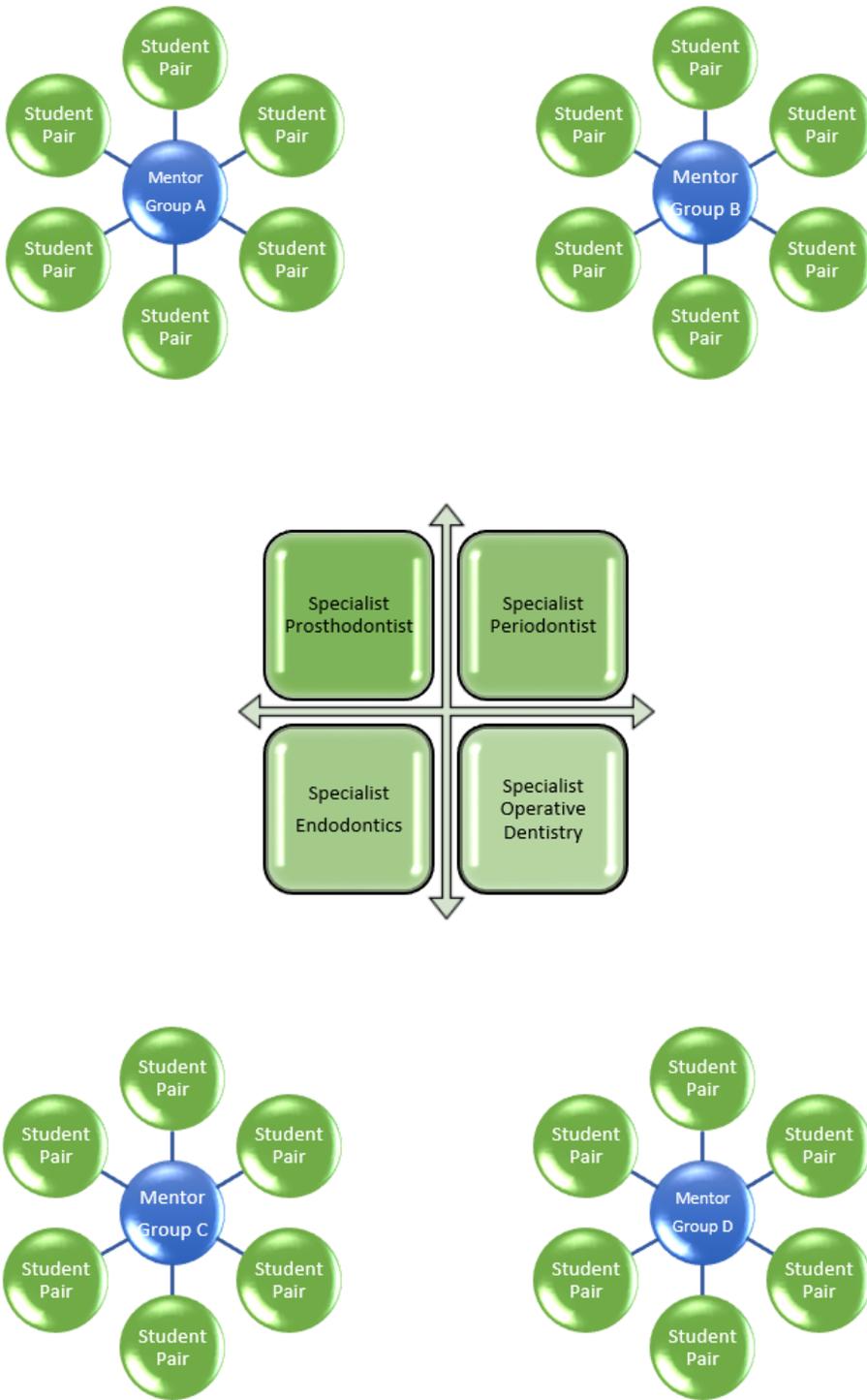


Figure 1

Layout of a comprehensive dental care clinic: four groups (A-D), each consisting of one General Dental Practitioner (Mentor), and six pairs of students (one student practiced while the other assisted) were under the supervision of a group of four specialists in Endodontics, Prosthodontics, Periodontics, and Operative Dentistry at any given time.

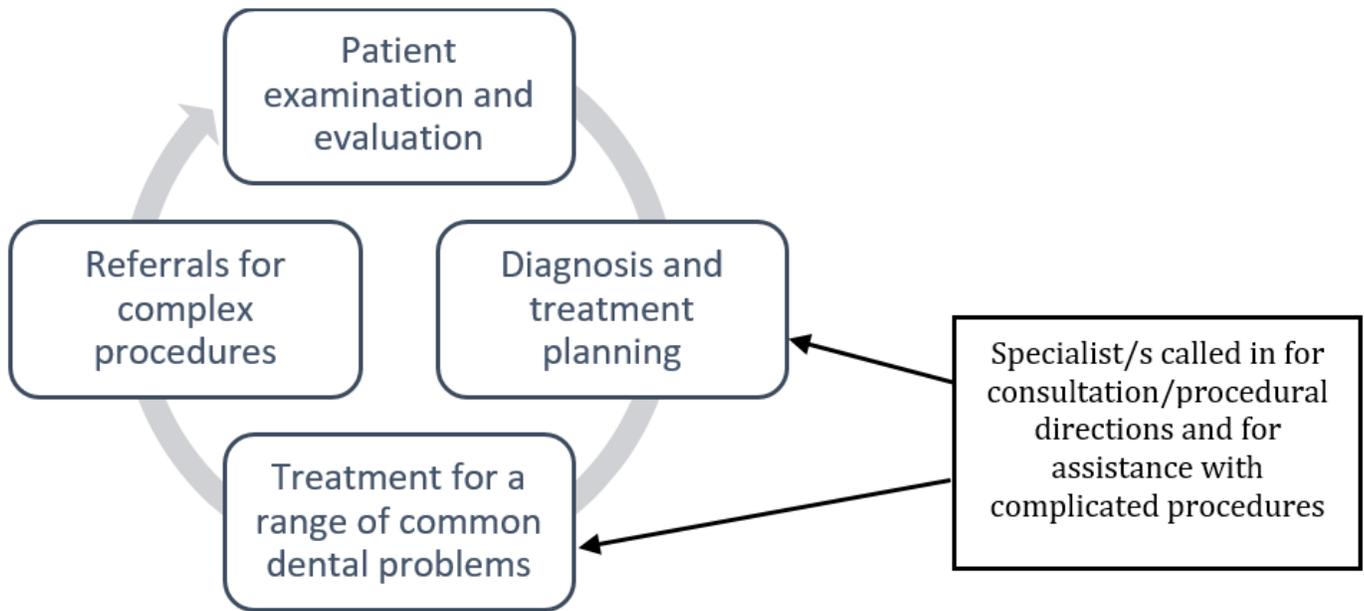


Figure 2

Role of specialists in the continuity of patient care in the “comprehensive care teaching model”

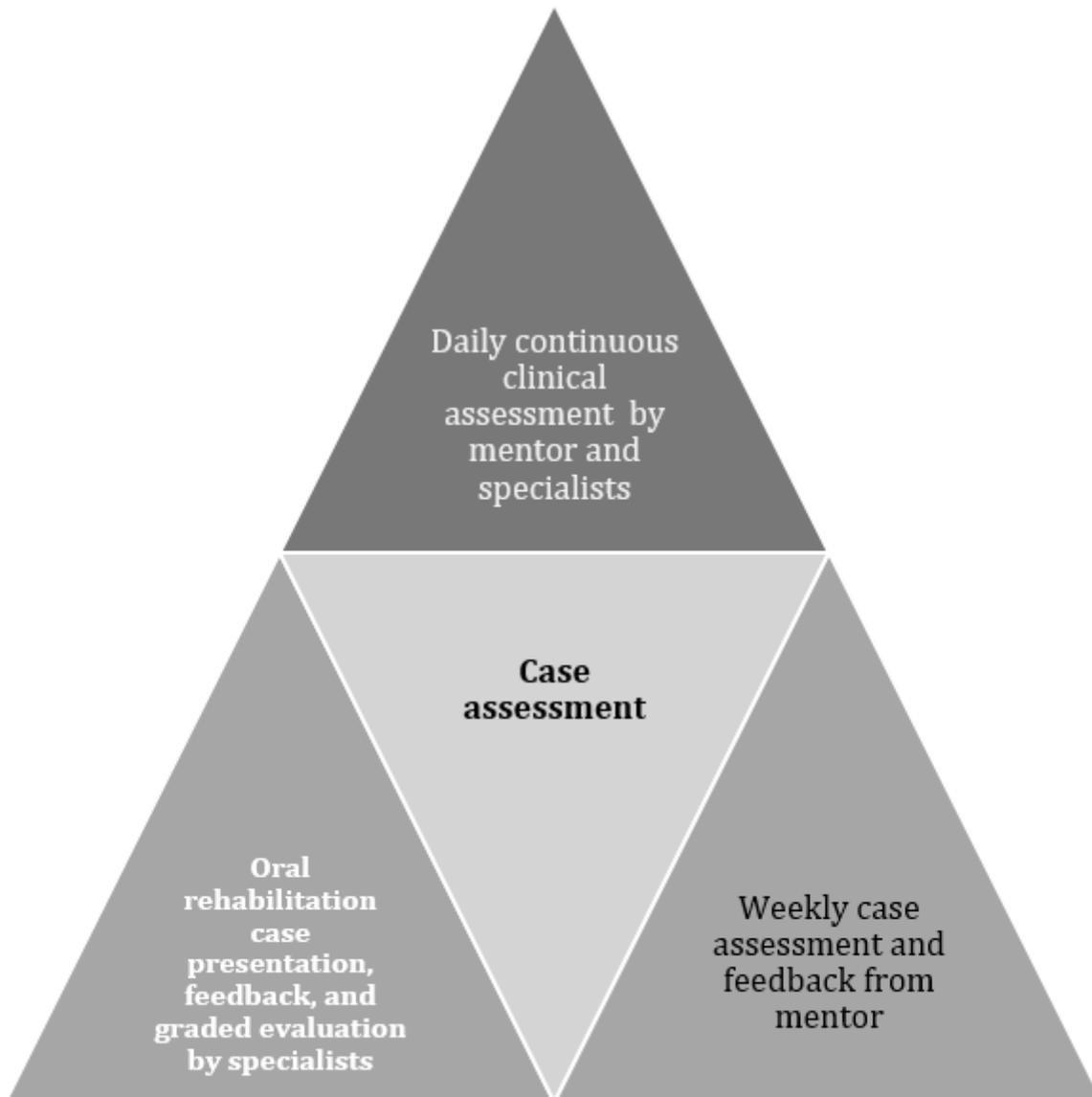


Figure 3

Student-case assessment, evaluation, and feedback