Facultad de Odontología

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Student perceptions of the educational environment in the dental context

INVESTIGATION

Percepciones estudiantiles sobre el entorno educativo en el contexto odontológico

Percepções dos estudantes sobre o ambiente educacional no contexto odontológico

Abstract

Objective: To summarize the main findings of studies that have assessed the educational environment in the dental context. Material and Methods: A literature review was conducted using the databases Scopus, PubMed, and Web of Science. Original articles published in Spanish or English that evaluated student responses related to the learning environment, educational climate, learning environment, educational environment, and educational climate were included. Results: Sixteen sources were identified, four of which were conducted in Saudi Arabia. Most studies evaluated the educational environment using the Dundee Ready Education Environment Measure. Educational environment scores were associated with several factors, such as student origin (international students reported lower perceptions of the educational environment) and year of study (younger students reported better perceptions than upper-year students). Conclusions: Student perceptions of the educational environment in dental programs were more positive than negative. In some cases, learning difficulties were attributed to stress generated by the environment and the cost of the program. It is advisable to review existing support systems or modify policies that impact student well-being and the educational environment.

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Resumen

Objetivo: Resumir los principales hallazgos de los estudios que han valorado el entorno educativo en el contexto odontológico. Métodos: Se diseñó una revisión narrativa de la literatura que exploró las bases de datos Scopus, Pubmed y Web of Science. Se incluyeron artículos originales publicados en español o inglés que evaluaron las respuestas estudiantiles relacionadas al ambiente de aprendizaje, clima educativo, entorno de aprendizaje, entorno educativo y ambiente educacional. Resultados: Se encontraron 16 fuentes. Cuatro de ellas realizadas en Arabia Saudí. La mayoría de estudios ha evaluado el entorno educativo a través de la escala Dundee Ready Education Environment Measure. Las puntuaciones del ambiente educativo tuvieron algunos factores asociados tales como el origen de los estudiantes (estudiantes internacionales evidencian menores percepciones del ambiente educativo) y el año de estudio (estudiantes de años menores evidencian una mejor percepción que estudiantes de años superiores o años finales). Conclusiones: La percepción estudiantil del entorno educativo en los programas de odontología es más positiva que negativa. En algunos casos se perciben dificultades en el aprendizaje debido al estrés que genera el ambiente y costo de la carrera. Es recomendable revisar los sistemas de apoyo que los programas instauran o modificar políticas que impacten en el bienestar estudiantil y el ambiente educacional.

Palabras clave: Estudiantes; Educación en Odontología; Aprendizaje; Ambiente.

Resumo

Objetivo: Resumir os principais achados de estudos que avaliaram o ambiente educacional em odontologia. Métodos: Foi realizada uma revisão narrativa da literatura, explorando as bases de dados Scopus, PubMed e Web of Science. Foram incluídos artigos originais publicados em espanhol ou inglês que avaliaram as respostas dos alunos relacionadas ao ambiente de aprendizagem, clima educacional, ambiente de aprendizagem, ambiente educacional e ambiente educacional. Resultados: Dezesseis fontes foram identificadas, quatro das quais foram conduzidas na Arábia Saudita. A maioria dos estudos avaliou o ambiente educacional utilizando a Medida de Ambiente Educacional Dundee Ready. As pontuações do ambiente educacional foram associadas a diversos fatores, como origem do aluno (alunos internacionais relataram menor percepção do ambiente educacional) e ano de estudo (alunos em anos mais jovens relataram melhor percepção do que alunos em anos mais avançados ou finais). Conclusões: As percepções dos alunos sobre o ambiente educacional em cursos de odontologia foram mais positivas do que negativas. Em alguns casos, dificuldades de aprendizagem foram percebidas devido ao estresse gerado pelo ambiente e ao custo do programa. É aconselhável revisar os sistemas de apoio que os programas estabelecem ou modificar políticas que impactam o bem-estar do aluno e o ambiente educacional.

Palavras-chave: Alunos; Educação Odontológica; Aprendizagem; Ambiente.

Introduction

Education in dental programs includes theoretical, practical, preclinical, clinical, and hospital-based subjects. This is a complex and challenging environment involving teachers, students, administrative staff, academic settings, research processes, community outreach, and patient care.

The educational environment (also referred to as the academic climate or learning environment) encompasses the processes, activities, and events that occur within an educational institution.[1] It prepares students for their future professional life and contributes to their personal, psychosomatic, and social well-being.[2] In addition to physical facilities and institutional resources, it also includes the values and psychosocial context that influence learning and teaching.[3]

The educational environment significantly impacts students from entry to graduation. This topic has been addressed in many health sciences programs, and dentistry is no exception. Multiple surveys have described and analyzed factors associated with the academic envi-

ronment in Europe,[4,5] Asia,[6,7] Africa,[8] North America and the Caribbean,[9,10] and South America.[11,12] The environment has been shown to influence student behavior, motivation, academic achievement, and well-being.[13] It affects student success, happiness, and overall achievement.[14] When positive and motivating, it fosters deep, self-regulated learning by stimulating processes such as goal setting, metacognition, and self-assessment, all of which influence learning in multiple ways.[15]

Dental schools, degrees and programs typically last 5 to 6 years. During this time, students take lectures, seminars, practicals, preclinical simulation, and clinical courses. In some countries, internships allow students to gain experience in hospitals, clinics, or dental offices. Interaction among teachers, students, and administrative personnel can sometimes be overwhelming and is often perceived by students as stressful or distressing. Student perceptions and opinions about their learning environment are frequently unknown.

Studying student perceptions of the academic environment is important because it is part of educational evaluation and the improvement of academic processes. It helps inform policies and improvements aimed at academic quality. It allows diagnosing the quality perceived by students and improving evaluation or accreditation indicators. It can also identify strengths and weaknesses of an institution, as well as compare the performance and success of institutions and contrast different levels according to program, country, or other factors.

This review summarizes the main findings of studies that have assessed the educational environment in dentistry, aiming to identify factors and dimensions that can be improved at the curricular level and to compare national and international contexts.

Materials and methods

A narrative literature review was conducted as a method to identify, evaluate, and synthesize scientific, academic, or practical knowledge in a specific field, with the aim of exploring what has been done or published on the topic.

The review aimed to analyze original (empirical) articles. Searches were conducted in the databases Scopus, PubMed, and Web of Science, covering the last five years (2019–December 2024) to ensure inclusion of the most current sources. The search algorithm was: ("dental student" OR "dental education") AND ("learning" OR "environment" OR "learning environment" OR "educative environment" OR "educational climate") AND ("students" OR "undergraduate" OR "undergraduate students") AND ("perceptions"). The search was conducted between January and February 2025 and was complemented by an advanced search using author names and journal titles from specialized dental education publications, including: Journal of Dental Education, International Journal of Dental Education, Journal of Academy of Dental Education, and Journal of Dental Sciences and Education.

Selection criteria for the sources of information included: original articles published in Spanish or English; studies conducted in dental, stomatology, dental science, or dental hygiene programs; articles that surveyed or interviewed undergraduate students; and those that evaluated the learning environment during face-to-face or virtual sessions. Studies assessing the learning environment in short programs (summer or vacation courses), non-face-to-face or blended sessions, or those conducted with graduate students or faculty were excluded.

In the first stage, all sources with the terms "learning environment" and "dentistry/dental education" in their titles were included. These were then filtered by year of publication, removal of duplicates, and exclusion of titles indicating they were not original research. In the second stage, abstracts were screened to determine whether they followed the structure of a scientific article and whether they presented results from undergraduate students. Potential articles were then read in full. These articles underwent a double review by two assistants, who assessed them against the inclusion criteria and identified potential categories relevant to the study.

Articles were downloaded in PDF format, and information was extracted into Excel. For each article, the objective, methods, and thematic categories were recorded, including: average DREEM score, factors related to the educational environment, problems within the educational environment, and main interpretations.

Results

Sixteen sources were included.[16–30] four of which were conducted in Saudi Arabia. All studies employed a quantitative approach, using either face-to-face (n = 8) or virtual (n = 8) surveys. Some programs were listed under other names, such as Oral Health, Dental Medicine, Oral Sciences, and Dental Sciences. Two of the studies were conducted as multicenter research.[16,21]

Table 1. Summary of studies assessing perceptions of the educational environment

Authors	Methods	Results
Pritchard *et al.* (2024) [16]	Face-to-face survey 336 students from 10 universities, Dentistry and Oral Health, Australia and New Zealand Scale used: Dundee Ready Education Environment Measure	Average DREEM score = 141. Regional universities scored higher than urban universities. First-year students scored higher than third-year students. Total scores for Oral Health students were higher than those for Australian dentistry students, but similar to those for New Zealand dentistry students.
Dávidovics *et al* (2024) [17]	Online survey 1,164 international and domestic students Medicine and Dentistry, Hungary Scale used: Dundee Ready Education Environment Measure	International students' perceptions were less favorable than those of domestic students. Average DREEM score = 118.1 for international students Average DREEM score = 122.6 for domestic students. Significant differences were observed in perceptions of teachers and the overall environment. The educational environment was interpreted as more positive than negative.
Temur and Kutlu Katırcıoğlu (2024)[18]	Face-to-face survey 76 students Dentistry, Turkey Scales used: educational environment, life satisfaction, psychological resilience	90.8% reported positive impressions of their educational institutions. 93.4% indicated satisfaction with the physical infrastructure, including the number of classrooms and laboratories. 68.4% considered the intensity and cost of the educational process to be negative. 77.6% reported that dental education was stressful. 44 students (57.8%) exhibited low resilience.
Maragha *et al.* (2024)[19]	Face-to-face interview 15 preclinical students Dentistry, Canada Questions focused on well-being and coping strategies	Students reported high levels of stress, anxiety, overwhelm, and fatigue. Lack of time was a barrier to practicing stress management strategies. Several challenges during the preclinical stage were perceived as negatively affecting well-being.
Gil *et al.* (2023)[20]	Online survey 2,022 first- to fourth-year students Dentistry, South Korea Scales used: Dundee Ready Education Environment Measure, Academic Major Satisfaction Scale Satisfaction Scale	539 students participated (response rate: 18.1%). Average DREEM score = 125.03. Average AMSS score = 22.01. Fourth-year students had the lowest scores on both scales. DREEM scores were positively associated with AMSS scores ($p < 0.001$).

Authors	Methods	Results
Alfakhry *et al.* (2023) [21]	Virtual survey 1,205 students, Three dental schools, Syria Scale used: Dundee Ready Education Environment Measure	Average DREEM score = 108.8. Significant differences were observed between the three universities. Perceptions of learning were unfavorable in two universities. Social self-perception scores were negative in all universities. Clinical-level students scored significantly lower than preclinical students.
Khalaf *et al.* (2023)[22]	Online survey 69 fifth-, sixth-, and seventh-year students Dentistry, Kuwait Scale used: Dundee Ready Education Environment Measure; Questionnaire on online teaching and learning	Perceptions of teachers were highest, followed by academic self-perception, then perception of learning. Social self-perceptions had the lowest scores. Student perceptions varied by year across all subscales except the online domain. Final-year students reported more favorable perceptions than students in earlier years.
Javed *et al.* (2023)[23]	Virtual survey 111 students and interns Dentistry Saudi Arabia Survey used: Dental Clinical Learning Environment Inventory	Average score = 67.5. The highest subscale score was for systematic self-assessment; the lowest was for patient punctuality. Respondents reported more positive than negative perceptions across all subscales.
Omoniyi-Esan *et al.* (2022)[24]	Face-to-face survey 111 students in anatomical pathology, Nigeria, Medicine and Dentistry Scale: Dundee Ready Education Environment Measure	Average DREEM score = 115.19. Students perceived their learning environment as more positive than negative. No statistically significant differences by gender, age group, or discipline. Academic self-perception and social self-perception were the domains with the greatest need for improvement.
Aldowsari *et al.* (2021)[25]	Virtual survey 272 third- to sixth-year students, Saudi Arabia, Dental Sciences Scale: Dundee Ready Education Environment Measure	Average DREEM score = 125.19. Perceptions of teaching scored highest, while perceptions of the environment scored lowest. No significant differences between preclinical and clinical students.
Arora *et al.* (2021) [26]	Face-to-face survey 92 fourth- to sixth-year students, Saudi Arabia, Dentistry Scale: Dundee Ready Education Environment Measure	Average DREEM score = 130.87. Lowest scores were identified in social self-perception; highest in perception of learning. Overall perceptions were more positive than negative.

Authors	Methods	Results
Serrano *et al*. (2021) [27]	Virtual survey 595 preclinical and clinical students, Netherlands Dentistry Scale: Dundee Ready Education Environment Measure	Average DREEM score = 124.3. Preclinical students had higher scores. Scores declined steadily over the six-year curriculum, with the lowest in the second and third years (transition from preclinical to clinical).
Ali *et al*. (2021)[28]	Face-to-face survey 157 students from three faculties Fiji Dentistry Survey: Dental Clinical Learning Environment Inventory	Average inventory score = 70.83. Good perception of the clinical learning environment. Issues included patients missing scheduled appointments.
Al Moaleem *et al* (2020)[29]	Face-to-face survey 330 third- to sixth-year students Saudi Arabia; Dentistry Scale: Dundee Ready Education Environment Measure	No significant gender differences in average scores for perceptions of learning. Significant differences by educational level, but none across subscales. Average DREEM score = 130.8 (males) and 130.2 (females). Both genders reported positive perceptions.
Stratulat *et al*. (2020)[5]	Face-to-face survey 256 international and domestic students, Romania Dental Medicine Scale: Dundee Ready Education Environment Measure	Average DREEM score = 117.82. Lower scores were obtained in academic and social self-perception. International students had more negative perceptions of the learning environment compared with domestic students. Student experiences could be improved by providing greater social support.
Stormon *et al*. (2019)[30]	Virtual survey 192 first- to fourth-year students, Australia Dental Sciences Scale: Dundee Ready Education Environment Measure	Average DREEM score = 127. Academic and social self-perception scores were lower than in other domains. Students in preclinical years and/or those with dentistry as their first career choice were more positive in all domains except social self-perception.

A) About the instruments used to measure the educational environment

Most studies evaluated the educational environment using the Dundee Ready Education Environment Measure (DREEM) scale.[5,16,17,21,24–27,29,30] Some combined DREEM with other instruments, such as the Academic Major Satisfaction Scale[20] and the Teaching and Learning Scale.[22] Other studies used different questionnaires and scales, including those measuring life satisfaction and resilience,[18] well-being and coping strategies,[19] and the clinical learning environment.[23,28]

B) About the main findings on the educational environment

Most studies found that students perceived their environment as more positive than negative, based on average DREEM scores exceeding 101. In Pritchard et al.[16] the average was 141, with higher scores for regional universities. In Al Moaleem et al.[29] the average was 130.6, with no significant differences between male and female students.

Several factors were associated with educational environment scores. International students reported lower perceptions of the educational environment,[5,17]

Students in earlier years expressed more positive perceptions than those in advanced or final years.[16,20,22,27] Likewise, preclinical students reported better perceptions than their clinical counterparts,[21,30] although one study found no differences between preclinical and clinical students,[25] and another reported the lowest scores during the transition from preclinical to clinical training.[27]

Levels of satisfaction in the learning environment varied, with some students expressing satisfaction with physical infrastructure and the number of classrooms and laboratories.[18] as well as with teachers and learning.[22]

c) Challenges within the educational environment

Some studies reported low scores in certain domains and noted sources of tension among students. In Temur and Kutlu Katırcıoğlu's study,[18] some students identified the intensity and cost of the educational process as negative and considered dental education to be stressful. Maragha et al.[19] found high levels of stress, anxiety, overwhelm, and fatigue. Khalaf et al.[22] and Arora et al.[26] both reported the lowest scores in social self-perception. Studies evaluating the environment during clinical activities revealed that students viewed patient punctuality negatively[23] and that the transition from preclinical to clinical training involved challenges that negatively affected well-being.[19]

Discussion

The educational environment is a key element in student learning, teaching, assessment, well-being, and development. Assessing it allows for the identification of shortcomings, strengths, opportunities for improvement, and strategies to enhance the environment or maintain existing positive aspects. This review identified student perceptions of the educational environment based on original research conducted in the dental context.

Most studies concur and highlight that perceptions are more positive than negative, though some dimensions require improvement and several related factors should be considered. Educational environment scores vary according to the educational, academic, and research culture of each program, university, and country. These differences may explain the variability in overall and domain-specific scores. Similarities in scores across some studies were attributed to shared cultural and educational characteristics.[25,26,29] Many studies used the same validated instrument (DREEM), which enables consistency and comparability of data.[16,17,21,24] The DREEM provides an overview of students' perceptions of the learning environment, and its domains can be analyzed to better understand the educational environment.

In the dental context, upper-year students often experience academic overload and are concerned not only about their grades but also about completing their graduation thesis and preparing for future examinations or professional requirements. For this group, social support is essential.[19] Support initiatives may include tutoring, mentoring, and individualized counseling programs aimed at reducing stress levels and improving academic performance. Mentors can help students develop the skills necessary to manage increased stress and workload effectively.

Some studies have reported that international students tend to have less favorable perceptions of the academic environment, often due to challenges in settling in and language barriers.[17] Cultural differences, homesickness, and disparities in educational systems can further influence this transition.[5] Students from markedly different social and educational backgrounds may require longer periods to adapt, and the absence of mentors, advisors, or tailored support programs can make this process more difficult for these students.

Although this review identified a substantial number of studies assessing perceptions of the educational environment in dentistry programs, several limitations should be noted. Some studies involved small sample sizes and lacked randomization, limiting the generalizability of their findings. Others did not employ the DREEM, making comparisons difficult, while some focused exclusively on the clinical environment rather than the overall educational environment.

Most studies did not account for individual student characteristics—such as personality traits, social and family relationships, prior experiences, life satisfaction, or psychological resilience—that may influence perceptions of the educational environment. All included studies used quantitative methods, which, while useful for identifying trends, do not capture individual opinions, comments, or critiques. Incorporating qualitative analyses would provide deeper insight into students' needs, preferences, and perspectives.

Conclusions

Based on the data from this review, students' perceptions of the educational environment in dentistry programs are generally more positive than negative. However, some studies report learning difficulties related to stress generated by the environment and the financial burden of the degree. Lower perception scores are frequently observed during clinical stages and in higher years, likely due to academic overload, increased stress, and reduced social engagement. Curricula should include strategies to enhance the learning environment may include structured tutoring and mentoring programs, reduction of clinical demands, continuous monitoring of student well-being, and socialization programs.

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