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ORIGINAL ARTICLE

Intraoral and extraoral physical assessment as an essential tool in dental prevention

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ABSTRACT

Introduction: intraoral and extraoral physical examination is an essential component of preventive dentistry, as it enables the identification of local abnormalities and early signs of systemic diseases, facilitating more accurate and timely diagnoses.
Objective: to analyze dental students' perception and level of knowledge regarding the importance of intraoral and extraoral physical examinations in preventive practice.
Methods: An exploratory, observational, descriptive, cross-sectional study was conducted on an intentional sample of 100 fourth-semester dental students. A structured survey was administered to collect data on the variables of interest, and descriptive statistical methods were used for analysis, adhering to bioethical principles.
Results: 54 % of students considered it necessary to perform physical examinations at every dental visit, while 21% believed they should be carried out only during the first consultation, and 18 % only when symptoms are present. Regarding knowledge, 47 students reported a sufficient level, with 37 % indicating a preference for educational videos as a learning method. 50 % of students rated extraoral examination as highly useful for detecting pathologies related to oral health.
Conclusions: findings highlight the need to standardize physical examination protocols and strengthen practical training in preventive dentistry. The diversity of perceptions regarding frequency and utility reflects gaps in education that must be addressed through innovative teaching strategies, integrating theory and practice to improve diagnostic quality and comprehensive patient care.

Keywords: Mouth; Students, Dental; Physical Examination; Preventive Dentistry.

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INTRODUCTION

To ensure an accurate diagnosis and provide appropriate treatment, a thorough intraoral and extraoral physical examination is essential in dental practice. This process not only focuses on assessing the patient's oral and dental health but also includes a meticulous evaluation of facial structures and surrounding soft tissues. This comprehensive approach not only detects dental and periodontal problems but also allows for the early identification of systemic diseases—such as diabetes, cardiovascular conditions, and even oral cancer—which is crucial for timely intervention and improved patient prognosis.[1]

The origins of this type of examination date back to the early 20th century, a pivotal period in the development of modern dentistry, when professionals began to recognize the critical importance of comprehensive assessment for the effective management of oral diseases and their implications for general health. In this historical context, dentistry shifted from a purely restorative focus toward a more preventive and holistic model, progressively incorporating knowledge from anatomy, physiology, pathology, and general medicine. This evolution not only broadened the scope of dental care but also laid the foundation for a more personalized, patient-centered practice focused on the prevention and early treatment of both oral and systemic conditions.[2]

However, this rich history of advances is not without contemporary challenges. The absence of a standardized protocol for intraoral and extraoral physical examination can lead to significant variations in how this fundamental assessment is performed. Such inconsistencies may affect diagnostic reliability and compromise the early detection and effective management of underlying conditions. Implementing standardized procedures is therefore crucial not only to ensure uniformity in clinical practice but also to enhance diagnostic accuracy and efficacy.[3]

Furthermore, continuous training and the development of advanced clinical skills are essential to address these challenges. Dental professionals must stay updated on scientific and technological advances in the field and develop competencies in applying modern assessment methods and effective patient communication techniques. This approach not only strengthens the dentist's diagnostic capacity but also promotes comprehensive, patient-centered care that encompasses both oral and general health.[2]

Beyond enabling early and precise diagnosis of dental and systemic conditions, this approach aims to provide a solid foundation for implementing timely preventive and therapeutic strategies. This includes the early detection of systemic diseases such as diabetes, hypertension, cardiovascular disorders, and oral cancer, allowing for coordinated medical intervention that significantly improves patient health outcomes.[3,4]

By establishing clear standards and effective procedures for physical examination, we also aim to enhance the efficiency and effectiveness of clinical dental practice. This involves not only continuous professional training and the development of advanced clinical skills but also the adoption of innovative technologies and tools that improve the precision and quality of physical assessment.[5,6] These considerations led to the present study, which aimed to analyze dental students' perception and level of knowledge regarding the importance of intraoral and extraoral physical examinations in preventive practice.

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METHODS

An observational, descriptive, cross-sectional study was conducted. This design was selected because it allowed for the analysis—at a single point in time—of dental students' perception and knowledge regarding the importance of intraoral and extraoral physical examinations in preventive practice, without manipulating variables or intervening in the educational process.

The study was carried out in the Dentistry program at the Autonomous Regional University of the Andes (UNIANDES), Ambato campus, Ecuador. Data collection took place during the second academic semester of 2024. The population consisted of 120 students enrolled in the fourth semester across sections A, B, C, and D. The final sample included 100 students who completed the survey, selected through intentional sampling.

Inclusion criteria:
• Students enrolled in the Dentistry program at the Ambato campus, currently attending the fourth semester.
• Provision of informed consent to participate in the study.

Procedures and techniques

Data were collected through a structured survey specifically designed for this study. The questionnaire included closed-ended and multiple-choice questions addressing: the perceived appropriate frequency for performing intraoral and extraoral physical examinations, level of knowledge about these procedures, preferred learning methods, estimated time required to complete a full examination, and perceived usefulness of extraoral assessment.

The variables analyzed were: perception of examination frequency, level of knowledge, perceived usefulness of extraoral examination, preferred learning method, and estimated time to perform the physical examination. The survey was administered in person in institutional classrooms under researcher supervision. Responses were recorded on paper forms and subsequently digitized into a database for analysis.

Statistical analysis

Descriptive statistical methods were used for data analysis. Absolute and relative frequencies (%) were calculated for categorical variables. Data processing was performed using IBM SPSS Statistics software, version 25. The statistical significance level was set at $p < 0,05$ for exploratory tests; however, inferential analyses were not conducted due to the descriptive nature of the study. Missing data were handled by case exclusion, as they represented less than 5 % of total responses. Bias control strategies included standardization of the survey administration procedure and prior training of interviewers.

Ethical considerations

The study was approved by the Ethics Committee of the Autonomous Regional University of the Andes (UNIANDES). All participants provided informed consent prior to completing the survey. Confidentiality of information and student anonymity were guaranteed. The research complied with the ethical principles established in the Declaration of Helsinki and with current national regulations regarding health research.

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RESULTS

Figure 1 reveals that more than half of the surveyed students (54 %) consider it appropriate to perform intraoral and extraoral physical examinations at every dental visit, reflecting significant awareness of the importance of continuous assessment in preventive care. However, 21 % believe these examinations should be limited to the initial consultation, 18 % associate them solely with the presence of symptoms, 6% rarely perform them, and only 1% suggest a semiannual frequency.

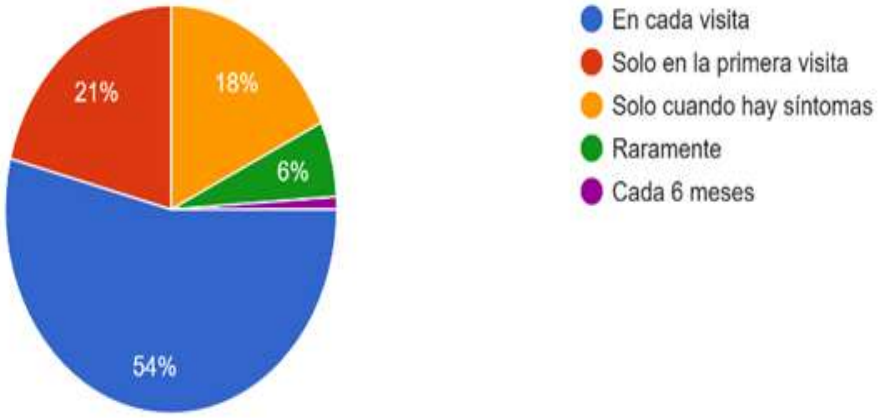

Fig. 1 Frequency of intraoral and extraoral physical examinations.

Figure 2 shows that 47 % of students consider their knowledge sufficient regarding the performance of intraoral and extraoral physical examinations, suggesting an acceptable foundational education in this area. Nevertheless, 32 % report a basic level of knowledge, and 7 % acknowledge having no knowledge at all, revealing significant gaps in clinical training. Only 14 % claim to have extensive knowledge, indicating that fewer than one in five students feel fully competent to apply these procedures confidently and judiciously.

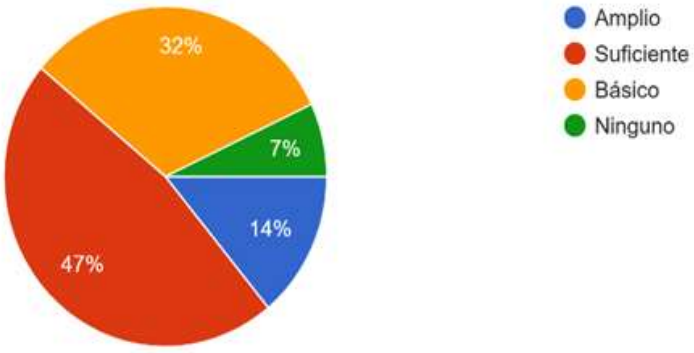

Fig. 2 Perception of knowledge regarding intraoral and extraoral physical examinations.

Figure 3 demonstrates that students consider audiovisual resources the most effective for learning how to properly perform intraoral and extraoral physical examinations, with educational videos being the preferred option for 37 % of respondents. Practical workshops followed closely at 35 %, indicating a clear preference for active and experiential teaching methods. In contrast, only 22 % chose theoretical lectures, and merely 6 % selected scientific books and articles, suggesting that traditional approaches have less impact on the acquisition of clinical skills.

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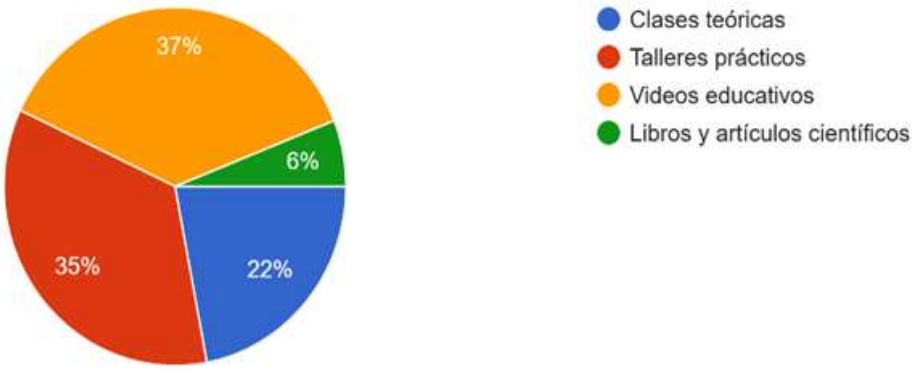

Fig. 3 Educational resources used to learn proper intraoral and extraoral physical examination techniques.

Figure 4 shows that 38 % of students dedicate between 5 and 10 minutes to performing a complete intraoral and extraoral physical examination—the most frequently reported time range. Twenty-five percent indicated they complete it in less than 5 minutes, while 24 % spend between 10 and 15 minutes, and only 13 % exceed 15 minutes.

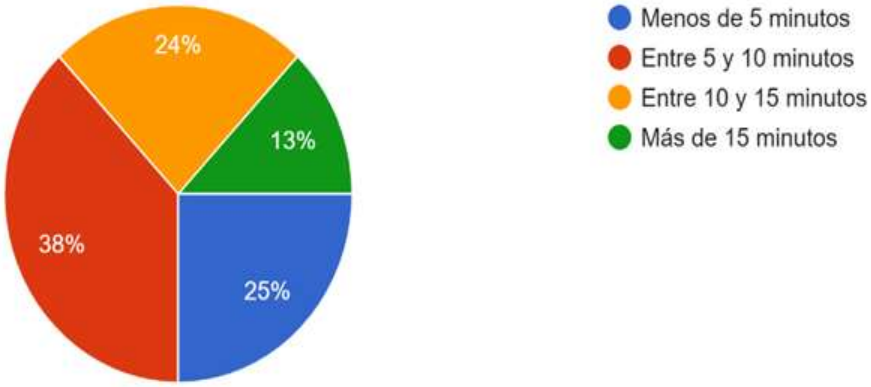

Fig. 4 Time dedicated to performing intraoral and extraoral physical examinations.

Figure 5 indicates that 50 % of students consider the extraoral physical examination very useful for identifying pathologies that could affect oral health, while 34 % rate it as useful. In contrast, 15 % perceive it as slightly useful, and less than 1 % consider it not useful at all.

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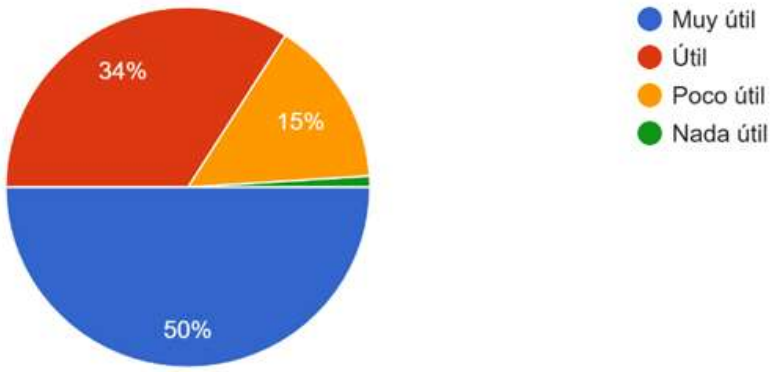

Fig. 5 Perception of the usefulness of extraoral physical examination for identifying pathologies that may affect oral health.

DISCUSSION

The findings of this study show that more than half of the surveyed students (54 %) consider it necessary to perform intraoral and extraoral physical examinations at every dental visit. This result reflects growing awareness of the importance of continuous assessment in preventive practice, consistent with reports from other authors.[7,8,9] However, the remaining proportion suggests that limited conceptions about the appropriate frequency of these procedures still persist. Previous studies, such as that by Frederic Llordachs,[3] have emphasized that physical examination should be routine at every consultation due to its role in the early detection of systemic diseases such as diabetes and cardiovascular conditions reports variability in clinical practice, where some professionals restrict the examination to the initial visit. This discrepancy highlights the need for standardized protocols to guide clinical practice toward uniformity and comprehensive prevention.

Regarding knowledge level, 47 % of students reported feeling sufficiently trained, although only 14 % stated they possess extensive knowledge. This finding reveals educational gaps that limit diagnostic confidence. Ponce has noted that lack of continuous training and absence of clear protocols affect diagnostic accuracy and compromise early detection.[2] Similarly, García et al.,[10] emphasize that physical examination is a key tool for identifying signs of systemic diseases but requires specific training to be applied effectively. The low proportion of students with extensive knowledge suggests that training programs should reinforce practical teaching and integration of clinical and general medical content.

Concerning preferred learning methods, students showed a clear inclination toward audiovisual resources (37 %) and practical workshops (35 %), over theoretical classes and scientific literature. This pattern aligns with findings by Eggmann et al.,[11] who demonstrated that digital technologies, such as interactive videos, enhance the acquisition of clinical skills in dentistry. However, the low valuation of traditional scientific sources poses a challenge: while audiovisual resources facilitate practical understanding, academic literature remains essential for evidence-based practice. Therefore, a methodological balance is required—one that combines pedagogical innovation with scientific rigor.

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The time devoted to physical examination also showed variability: the majority of students (38 %) spend between 5 and 10 minutes, while 25 % complete it in less than 5 minutes. This finding suggests that, although awareness of the examination's importance exists, some students may be underestimating the time required for a thorough assessment. According to the *Clinical Semiology Guide for Dentistry*, a complete examination requires 10 to 15 minutes to ensure adequate evaluation of intraoral and extraoral structures.[12] The observed discrepancy underscores the need to reinforce practical instruction on timing and examination sequences, ensuring that speed does not compromise diagnostic quality.

Finally, the perceived usefulness of the extraoral examination was high: 50 % rated it as very useful and 34 % as useful. This finding is consistent with studies from Medigraphic and UNAM, which highlight the relevance of extraoral exploration in identifying systemic pathologies and precancerous lesions.[13] However, 15 % of students considered it of little use, revealing gaps in the understanding of its clinical value. Divergent perceptions were also reported among professionals, reinforcing the need to standardize teaching and raise awareness about the relationship between oral and systemic health. The integration of these contents into dental education could enhance diagnostic capacity and promote comprehensive, patient-centered care.

CONCLUSION

The study demonstrates that intraoral and extraoral physical examinations are fundamental in preventive dentistry, both for oral health and for the early detection of systemic diseases. Although most students recognize their importance, discrepancies regarding application frequency persist, reflecting the absence of standardized protocols. Likewise, students prefer practical learning methods such as videos and workshops, aligning with the need to integrate theory and practice. There is an urgent need to investigate and validate new examination techniques and to implement clear standards that strengthen evidence-based practice and improve comprehensive patient care.

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