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Perception of Artificial Intelligence in Dentistry Students

Lisette Shaily Quispe-Flores[1] [0009-0009-9732-0644],
Vilma Mamani-Cori[1] [0000-0002-7073-4419],
Betsy Quispe Quispe[1] [0000-0002-2348-4875] y
Naysha Sharon Villanueva Alvaro[1] [0000-0002-4045-1303]
Universidad Nacional del Altiplano
vmamani@unap.edu.pe

Abstract

The incorporation of new and innovative technologies in the field of dentistry has generated significant advances and optimization of operating times in practice. This study had a quantitative approach and descriptive design, a questionnaire was applied to 220 students to evaluate the perception of Artificial Intelligence in dentistry students from a university in southern Perú. 45.9 % of those surveyed stated that they had a perception of agreement with AI in the field of dentistry, followed by 43.2 % who declared that they had no knowledge about AI; a statistically significant difference was found when measuring the association of per-ception about AI with sex ($X2_{(gl:2;\ p = 0.009)}$), age ($X2_{(gl:2;\ p = 0.015)}$) and academic cycle ($X2_{(gl:2;\ p = 0.016)}$). The majority of students had a perception in agreement with AI; this perception was associated with male students, students over 21 years of age, and students in clinical academic cycles.

Palabras clave: University students, Artificial intelligence, Dentistry, Perception.

Introduction

In recent decades, the field of dentistry has experienced significant advances induced by the incorporation of new and innovative technologies (Jeong et al., 2024; Karan-Romero et al., 2023). Among these advances, Artificial Intelligence (AI) has been positioned as a tool with the potential to radically transform dental practice; AI offers a variety of applications that can improve diagnostic accuracy, optimize treatment plans, personalize patient care, and automate repetitive tasks, freeing up valuable time for oral health professionals and students (Acharya et al., 2024; Amiri et al., 2024; Ghaffari et al., 2024).

Taking advantage of AI capabilities in the field of dentistry allows us to move to-wards a future where care is more precise, efficient, safe and accessible to all. Therefore, this study was carried out with the objective of evaluating the perception of Artiicial Intelligence in Dentistry students.

Literature review

Artificial intelligence

The term artificial intelligence (AI) was introduced by Professor John McCarthy in 1956 at the Dartmouth Conference (Xie et al., 2024). AI refers to the theory and creation of systems capable of perfor-

ming tasks that typically require human intelligence (Acharya et al., 2024); the method to make AI a reality is based on machine learning, where, through specific programming, computers are allowed to learn from data and not just execute specific functions (Xie et al., 2024).

Applications of Artificial Intelligence in Dentistry

Some of the applications of AI in Dentistry include: automated analysis of dental images that facilitate the early detection of anomalies or pathologies with high precision (Ossowska et al., 2022); planning of personalized and optimized treatments (Ghaffari et al., 2024); assistance during surgical dental procedures: implant placement or other complex surgeries (Xie et al., 2024); It is a support tool for managing children's behavior during dental procedures (Acharya et al., 2024); as well as in continuing education and improving operational training in clinical practice through virtual reality, augmented reality and virtual simulation technologies (Xie et al., 2024).

Method

The study had a quantitative approach and descriptive design. The objective was to evaluate the perception of Artificial Intelligence in Dentistry students. The sample was 220 students with regular enrollment in the Dentistry Program of a university in southern Peru; the perception of Artificial Intelligence was measured with a questionnaire adapted and validated in Spanish by Karan-Romero et al. (2023); the questionnaire has a high reliability Cronbach's Alpha α = 0.99. It has 15 questions about AI distributed in 3 dimensions: AI in clinical practice, AI in dental education and attitude towards the use of AI; and is valued on a Likert-type scale where: 3 = Agree, 2 = Unknown and 1 = Disagree. The study complied with the Helsinki ethical standards.

The data collected were analyzed using the statistical program SPPS v.25.0 (IBM, USA), the reliability of the questionnaire for this study gave a Cronbach's Alpha value α = 0,89.

Results

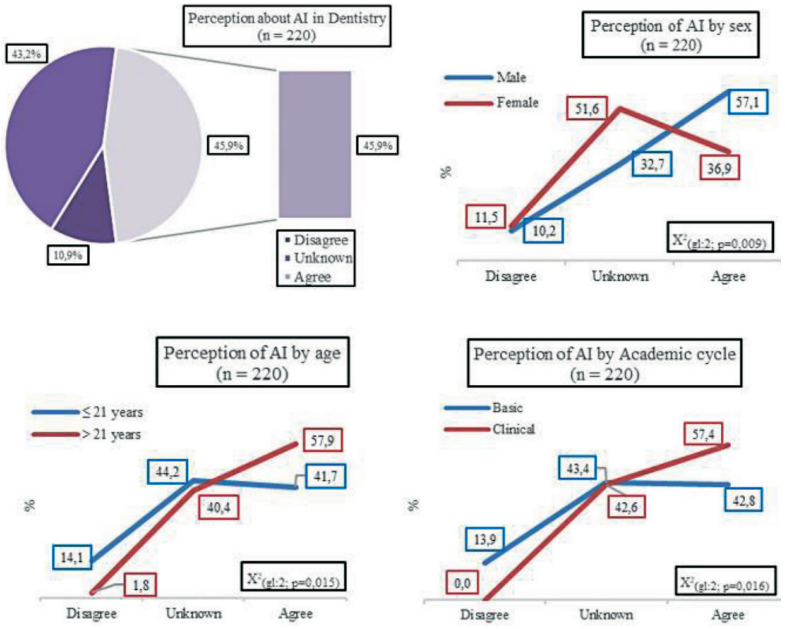
A total of 220 dentistry students voluntarily answered the questionnaire. Of these, 55,5 % were female and 78,6 % were taking subjects between the first and sixth cycle (see Table 1).

Tabla 1. Social and academic profile of dentistry

Items	n	%
Sex		
Female	122	55,5
Male	98	44,5
Age (years)		
≤ 21	163	74,1
> 21	57	25,9
Academic cycle		
Basic (I-VI cycle)	173	78,6
Clinical (VII-X cycle)	47	21,4

Regarding the students' perception of AI in the field of dentistry (see Fig. 1). 45,9 % of the students surveyed stated that they agreed with AI and 43,2 % stated that they were unaware of AI in the field of dentistry. A statistically significant difference was found when measuring the association of perception of AI with sex ($X2_{(gl:2;\ p = 0,009)}$), age ($X2_{(gl:2;\ p = 0,015)}$) and academic year ($X2_{(gl:2;\ p = 0,016)}$).

Fig. 1. Students' perception of AI in the field of Dentistry



Likewise, the students' perception of AI in the field of dentistry was evaluated for each dimension according to sex, age and academic cycle. In the AI in clinical practice di-mension, significant statistical differences were found in perception according to sex (p = 0,04*) and academic cycle (p = 0,011*). In the AI in dental education dimension, a statistically significant difference was estimated only according to age (p < 0,001*). And in the attitude dimension towards the use of AI, there was no significant statistical difference for sex, age, and academic cycle (see Table 12).

Tabla 2. Perception about AI for each dimension

Items (n = 220)	AI in clinical practice (p)	AI in dental education (p)	Attitude towards the use of AI (p)
Sex	0,04*	0,934*	0,473*
Age (years)	0,078*	< 0,001*	0,164*
Academic cycle	0,011*	0,18*	0,074*

* Chi-squared

Discussion

AI is a promising tool that will significantly influence dentistry in the future; In recent years, its increasing applicability has been seen in the detection and treatment of dental problems (Vashisht et al., 2024).

The results of this study showed that the majority of students indicated that they agreed with AI, similar results were reported by Jeon et al. (2024) and Karan-Romero et al. (2023) who found that 63,3 % and 86 % of students expressed interest in AI and that it will lead to great advances in dentistry.

Conclusions

Most students expressed a perception of agreement with AI. This perception was associated with male students, students over 21 years of age, and students in clinical academic cycles.

Limitations and future investigation

The main limitation was the low acceptance by students to collaborate with the study. It is suggested to carry out experimental design studies on the applicability of AI.

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