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LETTERS TO THE EDITOR:

Monitoring a Static DMFT Index in Health: An AI Tool for Oral Public Health

Monitoreo de un COP estático en salud: una herramienta de la IA para la salud pública bucodental

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Dear Editor,

This letter addresses the article published by Dantas *et al*. (1). Highlighting the great value of the work, its methodological rigor, and the need for perspectives and documentary reviews accompanied by Artificial Intelligence (AI) in the 21st century (2), in the article the authors explain the importance of generating research-based studies on Decayed, Missing and Filled Teeth (DMFT). Additionally, it demonstrates the possibility of clearly monitoring the indicator based on radiographic images and with AI tools, and above all the possibility of reaching an 80% accuracy for the DMFT index, with the aim of generating health data from AI.

These findings are part of the possibility of implementing diagnostic processes through panoramic radiography (OPG) by taking and identifying structures, through monitoring of the DMFT index, accompanied by AI, due to the ease of the OPG to be digitized and translated into a computational language (3), giving it the possibility of becoming a data producer, a thinking AI; an aspect that has been absent in the dental discipline given the complexity of oral health problems (4).

The article, of course, requires further methodological depth, including tools that allow clinicians to monitor their private practice. Likewise, it is important to discuss how the information generated can be used for decision making, both at the individual level and in the field of dental public health (DPH).

However, and based on the definition of DPH as “the science and art of preventing and controlling dental diseases and promoting dental health through organized community efforts (5)”, the findings of this study could provide a different line that can contribute to the monitoring and improvement of three key elements in the development of dental practice and especially in the control of oral diseases: research, promotion and prevention (P&P) and decisions in DPH.

The first element related to research that offers new possibilities, involves AI's ability to analyze panoramic radiographs (OPGs) with the assistance of technicians or radiologists. This technology would allow for a more in-depth analysis of diagnostic images, providing additional tools for the construction of biostatistical analyses and a better understanding of clinical elements, with a focus on oral public health (6).

In a second element, the application of AI in the P&P of oral diseases could improve accurate and early diagnosis, through image analysis (7), becoming an auxiliary tool that accompanies the clinician and would be highly useful in DPH. However, it faces some challenges that must be addressed to ensure its adoption (8), such as training algorithms for specific decision-making in P&P, based on interindividual variability, each person has unique characteristics. For example, obtaining a reliable record of data on oral hygiene needs which is adapted to a person's clinical condition in a standardized manner and in large quantities can make the generation of AI models difficult. This variability can even generate biases. If the data comes from a specific population, the model may not be generalizable to other groups. This makes it a challenge for P&P and requires more comprehensive approaches for the decision-making process.

However, AI could be used in the follow-up and evolution of the recommendations by constantly monitoring the DMFT index relying on a static DMFT concept, without variation and remaining in the F, avoiding additional losses or appearance of caries and promoting the respective adjustments if necessary. This could be widely learned by the algorithms, looking for a future impact on DPH.

In a third and final element, monitoring through AI and OPG could impact decisions in the DPH. Generating alerts and alarms through the DMFT could open effective communication channels through chatbots and virtual assistants. These resources can answer frequently asked questions, provide P&P advice, and schedule appointments as well as facilite access to information in remote areas or for people with reduced mobility. In addition to the purely DPH focus, it could offer the possibility of associating needs with systemic disease and risk factors, expanding the scope of action and the impact on overall health (9).

Strengthening information systems through the generation of public OPGs for community health is specifically related to the definition of DPH, based on the possibility of generating faster and more effective decision-making spaces and providing important individual clinical actions. The integration of tools such as those described with unique clinical histories becomes an important tracer for the development of follow-up tools. This would allow for a focus on health rather than disease (10), consolidating the integration of technology as a key tool for both individual dental practice and DPH and with approaches related to Primary Health Care.

Finally, the validations specific to each instrument need to be consolidated, including the possibility and analysis of false positives, false negatives, sensitivity, and specificity, in order to have tools valid for larger samples. This article is a very good start to these discussions, which

should continue to develop to provide more tools and ultimately lead to better individual and population health.

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