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Editorial

Impact of Artificial Intelligence (AI) in Dentistry

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Dentistry, like other health sciences, has undergone a profound transformation in recent years, ultimately marked by the introduction of Artificial Intelligence (AI), which has emerged as a transformative tool with the ability to process large volumes of data and learn from it, leading to significant advances in educational teaching, such as in the interpretation of dental images, disease prediction and treatment optimization. However, the use of AI in dentistry is not without challenges and ethical considerations that need to be carefully evaluated[1].

One of the advantages of the use of AI in dentistry is its ability to aid diagnosis through the rapid and concise analysis of radiographs as well as clinical data. This processing is done with the use of machine learning algorithms that can identify cavities and other dental conditions with a high success rate, resulting in timely diagnosis and earlier treatment. Another advantage is the operational efficiency that AI can bring to the dental practice. The automation of routine tasks such as appointment scheduling and record management allows dentists to focus on dental care, thus improving the patient experience[1,2].

Despite the benefits described above, the implementation of AI in dentistry faces several challenges. One of the most crucial problems lies in the reliance on large amounts of data to train AI models[3]. The quality and homogeneity of these data are fundamental for the correct

performance of the algorithms. However, in dentistry, most studies are based on small and heterogeneous data, which can compromise the reliability of the results and hinder their reproducibility; consequently, AI could exacerbate biases in clinical decision-making. It is therefore crucial that AI developers are aware of these biases and work to reduce them[2].

On the other hand, the implementation of AI in dentistry raises important ethical issues. Transparency and the ability to explain algorithmic processes are essential to gain the trust of both healthcare professionals and patients. It is crucial that dentists understand how and why an AI system arrives at a given recommendation and/or diagnosis. Also, data privacy and security become concerns, as AI often requires access to sensitive patient information, including medical records and imaging data. It is essential that dental practices implement measures to protect this information and ensure that it is used ethically and responsibly. The lack of clear regulations around the use of data in AI can lead to abuses and the violation of patient privacy[4].

Thus, while AI has the potential to revolutionize dentistry by improving diagnostic accuracy, optimizing treatments and increasing operational efficiency, its implementation must be approached with caution. It is imperative to strike a balance between harnessing this emerging technology and preserving the fundamental principles that govern the practice of dentistry, as we must not forget that clinical skill, professional judgement and empathy towards our patients are qualities that ultimately remain irreplaceable.

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