Artificial Intelligence in the Diagnosis and Prediction of Oral and Dental Diseases: A Systematic Review

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ABSTRACT

Introduction: Artificial intelligence (AI) plays a vital role as an advanced technology in medicine, especially in diagnosing and predicting oral and dental diseases. AI algorithms and models make it possible to analyze and predict oral and dental diseases with high accuracy and speed. The purpose of this study was to investigate the use of AI in the diagnosis and prediction of oral and dental diseases.

Search Strategy: This systematic review was conducted in 2024 by using the keywords “AI”, “diagnosis”, “prediction”, “oral disease”, and “dental disease”. Keywords were searched in reliable databases, including PubMed, Web of Science, and Google Scholar search engine, without a time limit. To ensure the completeness of the search results, the sources of the articles were checked, and after removing the duplicate titles from the endnote software and checking the titles and abstracts, the related articles were checked using JBi tools. After reviewing the quality of the articles, the findings from the checklist were recorded.

Results: A total of 2,710 articles were reviewed, and 12 related articles were selected. The results showed that AI can help diagnose and predict oral and dental diseases. Through the analysis of medical images, machine learning models can detect abnormal patterns and dangerous diseases such as oral cancer. They can also use data about previous diseases and their symptoms to discover patterns that indicate the occurrence of certain diseases, such as overcrowding and gum disease.

Conclusion and Discussion: According to the obtained findings, using AI to diagnose and predict oral and dental diseases can improve the diagnosis and treatment of diseases and increase the quality of oral and dental medical services. This technology can also help doctors and dentists and provide advice and support. However, it is necessary to update and improve AI models continuously.

Keywords: Artificial intelligence, Mouth disease, Systematic review

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