EXPERT SYSTEM FOR DENTAL DISEASE DIAGNOSIS USING FORWARD CHAINING METHOD WITH BAYES' THEOREM PROBABILITY

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ABSTRACT

Dental diseases are often not detected early due to a lack of public awareness and limited access to healthcare facilities. Many people only have their teeth checked when the condition has become severe, making treatment more difficult and more costly. To address this issue, this study aims to develop an expert system capable of independently diagnosing dental diseases. The system uses Forward Chaining to match symptoms with diagnostic rules established in the knowledge base, allowing it to determine possible diseases step-by-step based on user input. In addition, Bayes' Theorem is used to calculate the probability of each potential disease, producing a confidence level for the diagnosis. The system is built using PHP Laravel and MySQL, and tested with black-box testing to ensure its functionality. Accuracy testing by comparing the system's diagnosis results with experts shows an accuracy rate of 90%. This indicates that the method used can provide fairly accurate predictions. The system is expected to help the public recognize dental diseases earlier before consulting a dentist.

Keywords: Expert System, Forward Chaining, Bayes' Theorem, Dental Disease Diagnosis, Web.