The Future of Dentistry: Artificial Intelligence at the Forefront

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Artificial Intelligence (AI) is revolutionizing industries worldwide, and dentistry is no exception. It is the ability of machines to perform work that normally requires human intelligence. The AI programme is to be trained to identify patterns which is known as machine learning. The AI algorithm is exposed to random examples in order for it to gain experience in identifying the patterns. Once trained it will be able to recognize patterns independently.[1]

One of AI's most promising applications in dentistry is in diagnostic imaging. AI algorithms, particularly those utilizing deep learning, can now analyse dental radiographs with remarkable precision, detecting early signs of oral disease. AI programmes has been developed to identify even oral cancer. Studies have shown that AI systems can make detect caries lesions with 75.5 to 93.3 % accuracy and a with a sensitivity of 74.5 to 97.1%. By assisting with early detection, AI can potentially improve patient outcomes and reduce treatment costs.[1,2]

Treatment planning is another area where AI is making strides. In orthodontics, for instance, AI-driven software helps in developing predictive models which can simulate treatment outcomes, enabling dentists and orthodontists to provide more personalized care. This technology is particularly beneficial in the case of complex procedures like dental implants, where AI assists in planning the exact position and angle for optimal results.[2]

AI is also transforming patient management. AI-powered virtual assistants can streamline appointment scheduling, send reminders, and even follow up on post-treatment care, thus enhancing

the overall patient experience. Some platforms now provide 24/7 customer support, allowing patients to access care information at their convenience.[3]

The road blocks often faced developing AI based technology in medical field is the presence of systematic bias and inaccessibility of medical data.[1]

While AI will not replace dentists, it serves as a powerful tool to enhance their capabilities. As technology continues to evolve, AI's role in dentistry will likely expand, leading to better patient outcomes, more efficient practices, and a more personalized approach to dental care.

Reference

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