Revolutionizing Oral Healthcare through Artificial Intelligence

The term artificial intelligence (AI) is not newer but having panoramic uses planetary for decades and the conception of AI can be dated back to 1950. However, it did not become a interoperable tool until two decades ago and the realization of its incomprehensible potential dawned when the generalized usage of a large language model (LLM) was first made accessible in 2022 to the public domain.[1] Owing to the waterway improvement of three cornerstones of current AI technology-big data (coming through digital devices), computational power, and AI algorithm-in the past two decades, AI applications have started to provide comfort to people's lives. Since then, AI use has been widespread in various domains, including medicine and dentistry.[1,2] Basically AI is the concept where machine are getting capable of carrying out reflective tasks typically done by humans. When a machine exhibit the power to make conversant decisions, it can be referred to as being artificially intelligent.[2]

The integration of Artificial Intelligence (AI) in dentistry is transforming the field of oral healthcare, enabling dentists to provide more faithful diagnosis, efficient treatments, and personalized patient care.[3] AI-powered technologies are being increasingly adopted in dental practices, improving patient outcomes and revolutionizing the execution of work of dentists. While challenges and limitations exist, the benefits of AI in dentistry make it an attractive solution for improving patient outcomes and transforming the way dentists work. AI includes neural networks, which operate similarly to the human brain in terms of problem-solving and decision-making.[1,2] AI in dentistry is a rapidly growing field which helps in diagnosis and detection by analyzing medical images, such as X-rays and CT scans, to detect dental caries, oral cancer, and other abnormalities. Even while planning treatment many of the dentists develop personalized treatment plans, taking into account patient-specific factors, such as medical history, allergies, and lifestyle or enabling preventive measures and early intervention by predictive analytic.[4] AI-powered robots are one of the latest intervention that can assist dentists in performing complex procedures, such as implant placements and surgeries. Moreover patients can get engaged by AI-powered chat-bots by educating patients about oral health etc.[3]

Although AI can analyze large amounts of data, reducing the risk of human error and improving diagnosis accuracy, reducing treatment times and improving patient comfort but still fewer questioning and limitations exists such as AI algorithms require high-quality data to learn and make accurate predictions along with regulatory frameworks are needed to ensure the safe and effective use of AI in dentistry.[3,4] Not only this much ,dentists need training and education to effectively implement and integrate AI-powered technologies into their practices. Despite of technology amiable , still patients may be indecisive to adopt AI-powered dental technologies. The future of AI in dentistry is promising, with ongoing research and development aimed at improving AI algorithms, expanding applications, and enhancing patient care.[5,6] AI can be integrated with other technologies, such as 3D printing and robotics, to create comprehensive dental care solutions. While challenges and limitations exist, the benefits of AI in dentistry make it an attractive solution for improving patient outcomes and transforming the way dentists work. The compounding of AI holds providential prospective for the field of dentistry, contributing a luminous outlook for its future development. It is exigent for dental practitioners of every generation to grasp and accept this technology.

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