

Editorial



The artificial intelligence revolution in dentistry: transformation in patient education

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In dentistry, just like in every other field, we are witnessing revolutionary glimpses of ongoing scientific and technological advancements. The integration of artificial intelligence (AI) into healthcare has strengthened the potential for stronger patient communication, which plays an undeniable role in the success of treatments. In particular, there is ever-increasing interest in AI-supported chatbots as a platform that provides people with the comfort of rapidly accessing up-to-date information in a short time through two-way conversation. Patients now have the opportunity to obtain information about their diseases wherever and whenever they want. In addition, chatbots fulfill the role of good assistants, helping to alleviate dentists' intense workload.

When analyzing the overall functioning of healthcare institutions, the appointment system emerges as a common issue. A downside of this system is that immediate interventions cannot be provided, especially for non-urgent patients. Unfortunately, despite technological progress, physically overcoming this situation may not be possible. This situation can be further complicated in some regions due to an insufficient number of dentists, inadequate equipment, or insufficient infrastructure. Although public service announcements and awareness-raising efforts can help solve this problem, they cannot create the desired level of impact. Chatbots can make it possible to inform individuals about diseases, increase their awareness, and even prevent some diseases. For example, seemingly simple information about oral hygiene is critical because periodontitis is linked to numerous chronic conditions, including cardiovascular disease, diabetes, rheumatoid arthritis, Alzheimer's disease, and specific types of cancer [1-4].

Health can often be summarized with the phrase "it starts in the mouth." However, oral and dental health problems are often ignored or deferred. In particular, periodontal diseases usually progress silently, with the exception of acute lesions, making it nearly impossible for patients to detect the disease in its early stages. By the time individuals seek dental care, the problems have often become more complex. This not only compromises the patient's oral health but also leads to negative social consequences due to diminished function and aesthetics. Moreover, the treatment becomes more costly and time-consuming, and it increases the dentist's workload. Therefore, increasing individuals' awareness about oral and dental health and providing them with accurate information could prevent this entire negative cycle before it even starts. However, despite advances in diagnosis and treatment, some deficiencies have yet to be addressed. This is where AI can be instrumental. AI

demonstrates remarkable effectiveness in decision-making, with high speed, efficiency, and precision [5]. AI-supported chatbots are particularly valuable for providing direct access to information and, consequently, for patient education.

Many studies in the literature show that patients prefer the internet as the primary source of accessing medical information [6-8]. The convenience of accessing all the information offered by the internet in one place is one reason why patients use chatbots. For instance, chatbots can guide individuals with no medical background to the appropriate clinic for consultation. Consequently, early intervention in diseases is possible, reducing the potential for time loss. Chatbots can also be essential in emergencies by offering rapid information. However, it is important to remember that chatbots are not capable of providing medical treatment. Additionally, due to wide-ranging cultural and linguistic differences, AI-supported chatbots may not fully understand patients' complaints. This can lead to incorrect diagnoses or the failure to recognize a critical case. Moreover, chatbots may express some biases based on the data they were trained on, potentially inducing patients toward self-medication. Additionally, disclosing personal information online requires strict security and ethical rules. Therefore, the performance of AI-supported chatbots in accurately directing patients and providing relevant information is of paramount importance.

The ability of AI-supported chatbots to provide health information should improve in tandem with the daily growth of health knowledge. This is a necessity both for patients to access accurate information and to support patients' decision-making processes. Therefore, it is of the utmost importance to constantly update and develop AI in healthcare. When used appropriately, the information provided by chatbots can help patients better understand their health status and make informed decisions. AI-supported chatbots, which are increasingly utilized in dentistry for optimizing diagnosis and treatment, have the crucial capacity to deliver prompt and precise information, making them an indispensable component of patient education.

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