Academia Journal of Medicine

Review Paper | **AJM** | **ISSN: 2663-8290 (Online)**

Open Access **https://medjournal.co.in/index.php/ajm** **Volume 7, Issue 1**

Utilization of ChatGPT in Dental Healthcare

Dr. Sanjula Sirohi[1]

[1]MDS, Consultant Endodontist, Om Medical Centre, Ghaziabad, Uttar Pradesh, India.

Article History

Received: 18-05-2024
Revised: 19-05-2024
Accepted: 19-05-2024
Published: 21-05-2024

How to Cite

Sanjula S. Utilization of ChatGPT in Dental Healthcare. Acad J Med 2024; 7(1): 61-64.

Abstract

The integration of artificial intelligence (AI) in the field of dentistry has been gaining prominence, with Chatbot Generative Pretrained Transformer (ChatGPT), emerging as a pivotal tool. ChatGPT's applications span a myriad of functionalities including diagnostic aid, educational support, and patient interaction.

Corresponding Author

Dr. Sanjula Sirohi
Email: sanjulasirohi@gmail.com

Keywords

ChatGPT, Dentistry, Application

DOI **https://doi.org/10.62245/ajm.v7.i1.10**

1. INTRODUCTION

AI's evolution has propelled the adoption of smarter and more efficient technologies in healthcare.[1] Dentistry, benefiting from the AI wave, has seen breakthroughs like ChatGPT streamline operations and augment dental care quality. Such technologies are not only poised to facilitate clinical procedures but also reshape patient engagements and dental education.[2,3]

2. ChatGPT

ChatGPT is an AI language model developed by OpenAI, capable of understanding and generating human-like text. It interacts in a conversational way, providing answers across various topics, designed to simulate a human chat partner with a deep learning architecture to continuously improve its performance.[4,5]

3. VARIOUS APPLICATION OF CHATGPT IN DENTISTRY

3.1. Patient Screening: ChatGPT can be used for initial patient screenings, automating the process of collecting a patient's medical history and symptoms. It saves time and ensures no detail is overlooked before a dental consultation.[6]

3.2. Appointment Scheduling: AI can manage appointment bookings by conversing with patients, offering available slots, and rescheduling as needed. It streamlines the process, making it more efficient for both patients and dental office staff.[7]

3.3. Treatment Explanation: ChatGPT can explain dental procedures in accessible language, helping patients understand treatment options, what they involve, and the aftercare required. It can help alleviate anxiety by providing thorough and patient-friendly explanations.[8]

3.4. Automated Follow-ups: After procedures, the AI can automate follow-up messages to check on the patient's condition, remind them of aftercare instructions, or prompt them to schedule a follow-up visit, enhancing patient care and compliance.[9]

3.5. Education and Prevention: Dentists can use ChatGPT to educate patients on oral hygiene, disease prevention, and nutrition. It can generate tailored advice based on individual patient profiles and help in promoting better dental health practices.[10]

3.6. Interpretation of Diagnostic Results: AI can assist in interpreting some diagnostic results, such as explaining X-ray findings in simple terms to patients or flagging anomalies for a dentist's review, thus augmenting clinical decision-making.[11]

3.7. Training Aid: For dental students and professionals, ChatGPT can be a training tool, providing quick access to dental knowledge, case studies, and literature, and even simulating patient interactions for educational purposes.[12]

3.8. Language Translation: With multilingual abilities, ChatGPT can serve as a translation aid in multilingual communities or for travelers in need of dental care abroad, enhancing communication between dentists and patients who speak different languages.[13]

3.9. Insurance Processing: Automating insurance claims processing and answering related queries can be managed by ChatGPT, saving time for office staff and helping patients understand their coverage and anticipated costs.[14]

3.10. Feedback Collection: AI can conduct patient satisfaction surveys and collect feedback on dental services provided. This information can be used to improve patient experiences and dental practice management.[1]

3.11. Dental Marketing: Engage potential and current patients through AI-powered social media interactions, emails, and text messages.[4]

4. BENEFITS OF ChatGPT

ChatGPT in dentistry improves efficiency, scales educational resources, personalizes patient care, and reduces potential human errors. Additionally, it ensures 24/7 availability for administrative and informative purposes, enhancing overall patient satisfaction.[8,9]

5. LIMITATIONS

Despite its versatile applications, limitations include its dependence on input data quality and the potential for perpetuating biases present in training data. Ethical considerations regarding patient privacy and data security also pose challenges. Besides, complex clinical decision-making requires human expertise that AI cannot yet replicate.[10,11]

6. FUTURE DIRECTIONS

AI's trajectory in dentistry suggests a focus on interoperability with existing electronic health record systems, development of more robust AI models for complex diagnoses, and advancements in AI-assisted surgical procedures. Addressing ethical and security considerations will remain critical.[12]

7. CONCLUSION

ChatGPT has evidenced utility in a range of dental applications from administrative functions to clinical support. While it enhances practice efficiency and patient experience, the necessity for thoughtful integration with professional oversight cannot be overstated. Acknowledging limitations while capitalizing on AI advancements will be a balancing act for the future of technology-enhanced dentistry.

8. REFERENCES

1. Dhopte A & Bagde H. Smart Smile: Revolutionizing Dentistry With Artificial Intelligence. Cureus. 2023 Jun 30;15:e41227.

2. Khanagar SB, Al-Ehaideb A, Maganur PC, Vishwanathaiah S, Patil S, Baeshen HA, Sarode SC, Bhandi S. Developments, application, and performance of artificial intelligence in dentistry - A systematic review. J Dent Sci. 2021;16(1):508-522.
3. Shan T, Tay FR, Gu L. Application of Artificial Intelligence in Dentistry. J Dent Res. 2021 Mar;100(3):232-244.
4. Jeyaraman M, Ramasubramanian S, Balaji S, Jeyaraman N, Nallakumarasamy A, Sharma S. ChatGPT in action: Harnessing artificial intelligence potential and addressing ethical challenges in medicine, education, and scientific research. World J Methodol. 2023 Sep 20;13(4):170-178.
5. King MR. chatGPT. A Conversation on Artificial Intelligence, Chatbots, and Plagiarism in Higher Education. *Cell Mol Bioeng*. 2023;16:1.
6. Dave T, Athaluri SA, Singh S. ChatGPT in medicine: an overview of its applications, advantages, limitations, future prospects, and ethical considerations. Front Artif Intell. 2023;4;6:1169595
7. Samorani M & Blount LG. Machine Learning and Medical Appointment Scheduling: Creating and Perpetuating Inequalities in Access to Health Care. *Am J Public Health.* 2020;110:440-441.
8. Pethani F. Promises and perils of artificial intelligence in dentistry. *Aust Dent J*. 2021;66:124.
9. Ahmed N, Abbasi MS, Zuberi F, Qamar W, Halim MSB, Maqsood A, Alam MK. Artificial Intelligence Techniques: Analysis, Application, and Outcome in Dentistry-A Systematic Review. Biomed Res Int. 2021;2021:9751564.
10. Al-Antari MA. Artificial Intelligence for Medical Diagnostics-Existing and Future AI Technology! Diagnostics (Basel). 2023;12;13:688.
11. Hung K, Montalvao C, Tanaka R, Kawai T, Bornstein MM. The use and performance of artificial intelligence applications in dental and maxillofacial radiology: A systematic review. Dentomaxillofac Radiol. 2020;49(1):20190107.
12. Alhaidry HM, Fatani B, Alrayes JO, Almana AM, Alfhaed NK. ChatGPT in Dentistry: A Comprehensive Review. Cureus. 2023 Apr 30;15(4):e38317.