



Letter to the Editor

Advancing Oral Squamous Cell Carcinoma Patient Care with Artificial Intelligence: From Prediction to Rehabilitation

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Cite This Article: Haridevamuthu, B. Advancing Oral Squamous Cell Carcinoma Patient Care with Artificial Intelligence: From Prediction to Rehabilitation. *EJMO* 2024;8(2):233–234.

Dear Editor-in-Chief,

I am writing to underscore the immense potential of artificial intelligence (AI) in revolutionizing the quality of life for patients with oral squamous cell carcinoma (OSCC), mainly through enhanced functional outcomes post-treatment.^[1] The power of AI to analyze intricate datasets and forecast outcomes presents unprecedented opportunities in this field, inspiring a future where OSCC care is significantly improved.^[2] Despite advances in OSCC treatment, patients continue to face challenges with speech and eating functions, profoundly affecting their social and emotional well-being. The capacity of AI to analyze complex data and predict outcomes presents a promising avenue to address these issues. AI can enable personalized treatment by predicting the functional impact of various therapeutic approaches. Machine learning models can use pre-treatment data to forecast the degree of functional impairment, aiding clinicians in choosing the least invasive yet effective treatment options.^[3] Additionally, AI can tailor rehabilitation efforts by adjusting speech therapy in real-time and optimizing dietary plans based on individual needs, thereby enhancing recovery and nutritional intake. To fully harness the transformative power of AI, I urgently advocate for focused research in the following pivotal areas,

AI Models Predicting Functional Outcomes in OSCC Patients Post-Treatment

Developing AI models that can predict functional outcomes such as speech and eating capabilities post-treatment is crucial. These models can analyze diverse datasets, including clinical, imaging, and treatment response data, to forecast the degree of functional recovery or impairment a patient might experience.^[4] This predictive power allows for more informed decisions in treatment planning, aiming to balance disease control with preserving quality of life. Encouraging research in this area could lead to personalized treatment protocols that minimize functional loss based on individual patient profiles.^[5]

AI-Enhanced Rehabilitation Strategies for Speech and Eating Functions

AI can revolutionize rehabilitation by adapting and personalizing therapy regimens based on real-time patient progress. For speech therapy, AI-driven applications can use speech recognition and processing to adjust exercises and feedback for optimal recovery.^[6] AI can analyze changes in masticatory and swallowing abilities for eating functions to tailor dietary recommendations and therapy exercises. Research into AI-enhanced rehabilitation can lead to dynam-

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Submitted Date: May 04, 2024 **Accepted Date:** May 30, 2024 **Available Online Date:** July 10, 2024

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ic, responsive interventions that accelerate recovery and improve overall functionality for OSCC patients.

AI Tools for Monitoring and Supporting the Psychosocial Well-Being of OSCC Patients

The psychosocial impact of OSCC and its treatment is profound, often leading to depression, anxiety, and social withdrawal due to functional deficits. AI tools can be critical in early detection and intervention for these issues. By analyzing patient-reported outcomes, social media interactions, and behavioral data, AI can identify patterns indicative of psychological distress.^[7] Encouraging research in this area could lead to the development of AI-based monitoring systems that trigger alerts for healthcare providers to initiate timely psychosocial support, thereby improving overall patient care.

By prioritizing research in these areas, we can lead the way in a more comprehensive and patient-centered approach to OSCC care. This could potentially transform the lives of those affected by this challenging disease, underscoring the crucial role of healthcare professionals and researchers in advancing AI technology.

Disclosures

Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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