

Oral abstracts of the 2024 FDI World Dental Congress

“General Dentistry » Digital Dentistry

Accepted: Oral Presentation – Research

Development & validating mobile application for post-dental procedure care

Agraja Ganpat Patil*

Department of Periodontics, MGM Dental College and Hospital, Kamothe, Navi Mumbai, India

AIM or PURPOSE: An oral cavity requires specific care after a dental procedure. Post-operatively, if a patient doesn't follow the directives of the dental surgeon, complications occur such as delayed healing, causing aggravation of discomfort. A mobile application can provide post-operative instructions regarding oral hygiene maintenance, to help reduce complications and achieve desirable outcomes in less time. Hence this study aims to develop and validate a prototype of a mobile application for post-operative dental patient care

MATERIALS and METHOD: A post-procedure protocol was established. After sketching the main screens on paper, defining design features, a low/medium fidelity wireframe i.e. an initial digital layout of the app using the UI/UX tool FIGMA was made. An application code was written in JavaScript following the HIPPA guidelines.

1. A pilot study with a control group of subjects receiving only verbal instructions and a test group who used the app was done to observe the reception of patients towards the app. After 14 days, Questionnaire-based feedback was taken, and mean scores for quality by aesthetics, functionality, engagement, and information were calculated.

2. Heuristic analysis by the blinding method was done by application developers and scored on engagement, functionality, and customizability.

RESULTS: Patients require additional interactive media to ensure post-procedure instructions are followed. This application meets the required score in accuracy, esthetics, and functionality.

CONCLUSION(S): India's first post-dental health care app. A simple scalable and sustainable solution that can also be used as an adjunct to conventional motivational techniques. It may be a viable method to reach out to the masses and improve oral health.

<https://doi.org/10.1016/j.identj.2024.07.577>

Deep-learning model for assessing difficulty in localizing impacted canines

Mustafa Özcan*¹, Buket Erdem¹, Begüm Turan², Nazlı Tokatlı³, Çağla Şar¹, Fulya Özdemir¹

¹Department of Orthodontics, Istanbul Health and Technology University, Istanbul, Türkiye; ²Department of Orthodontics, Marmara

University, Istanbul, Türkiye; ³Department of Computer Engineering, Istanbul Health and Technology University, Istanbul, Türkiye

AIM or PURPOSE: The aim of this study is to examine if an artificial intelligence algorithm can be used for identifying the bucco-palatinal position of the maxillary impacted canine from the panoramic X-rays.

MATERIALS and METHOD: A total of 810 panoramic x-rays were obtained from the archive of University, Faculty of Dentistry, Department of Orthodontics. X-rays included cases with unilateral/bilaterally impacted canines. We used a Convolutional Neural Network (CNN) to forecast where the impacted canines crown would be situated. CNNs excel at classifying images as they can autonomously and flexibly grasp hierarchies of features, from input images. The implementation of the proposed deep learning model has been done using the Python programming language and libraries (TensorFlow and Numpy). The dataset that was used to train the proposed model categorized into buccal, middle, and palatal positioned samples. These samples are mainly 2D panoramic X-rays combined with clinical information about the location of the canine. The expectation from the model is to determine the location of the crown of the maxillary-impacted canine. The model's prediction of the impacted canine's location was assessed in bucco-palatinal directions.

RESULTS: The proposed deep learning model predicts the position of the impacted canine in the buccal, middle, or palatal position with 68% accuracy.

CONCLUSION(S): This multidisciplinary research study developed a deep learning model to automate the detection and positioning of impacted canines on panoramic dental X-rays. Lastly, further research is required to refine the model for clinical implementation and to explore its integration into routine orthodontic practice

<https://doi.org/10.1016/j.identj.2024.07.578>

Reliability and usefulness of ChatGPT in temporomandibular joint disorders

Betül Kula*¹, Ahmet Kula², Fatih Bağcıer³, Bülent Alyanak⁴

¹Department of Orthodontics, Faculty of Dentistry, Istanbul Galata University, Istanbul, Türkiye; ²Department of Prosthodontics, Faculty of Dentistry, Uskudar University, Istanbul, Türkiye; ³Clinic of Physical Medicine and Rehabilitation, Cam and Sakura City Hospital, Istanbul, Türkiye; ⁴Department of Physical Medicine and Rehabilitation, Kocaeli University Faculty of Medicine, Kocaeli, Türkiye

AIM or PURPOSE: Temporomandibular disorder (TMD) is a broad term describing heterogeneous musculoskeletal and neuromuscular dysfunction. Accurate information about this complex disorder group is essential to patients and clinicians. ChatGPT, a natural language processing technology developed by OpenAI, shows promise in several sectors, including healthcare. ChatGPT can facilitate information sharing in