

Other journals in brief

A selection of abstracts of clinically relevant papers from other journals.
The abstracts on this page have been chosen and edited by Reena Wadia.

Perio and gut microbial dysbiosis

Baima G, Ferrocino I, Del Lupo V *et al.* Effect of Periodontitis and Periodontal Therapy on Oral and Gut Microbiota. *J Dent Res* 2024; DOI: 10.1177/00220345231222800.

Periodontal treatment both mitigated oral dysbiosis and altered gut microbial composition.

This study aimed to explore the oral-gut microbial signatures associated with periodontitis. Stool and saliva samples from generalised stage III/IV periodontitis patients ($n = 47$) were collected and analysed by 16S ribosomal RNA gene amplicon sequencing before and three months after steps I to II of periodontal therapy. Periodontally healthy matched subjects ($n = 47$) were used as controls. Principal component analysis was carried out to identify oral-gut microbial profiles between periodontitis patients at baseline and healthy subjects; periodontitis samples were longitudinally compared before and after treatment. β -Diversity of gut microbial profiles of periodontitis patients before treatment significantly differed from healthy controls. Periodontal therapy was associated with a significant change in gut microbiota, with post-treatment microbial profiles similar to healthy volunteers. A higher abundance of *Bacteroides*, *Faecalibacterium*, *Fusobacterium*, and *Lachnospiraceae* was noted in faecal samples of periodontitis patients at baseline compared to healthy controls. Periodontal therapy led to a parallel reduction in the salivary carriage of periodontal pathobionts, as well as gut *Bacteroides*, *Lachnoclostridium*, *Lachnospiraceae*, *Oscillospiraceae*, and *Ruminococcaceae*, to levels similar to healthy controls.

<https://doi.org/10.1038/s41415-024-7257-3>

ChatGPT's performance in exams

Danesh A, Pazouki H, Danesh F, Danesh A, Vardar-Sengul S. Artificial intelligence in dental education: ChatGPT's performance on the periodontic in-service examination. *J Periodontol* 2024; DOI: 10.1002/JPER.23-0514.

Both chatbot models leave considerable room for misinformation with their responses relating to periodontology.

ChatGPT3.5 and ChatGPT4 were evaluated on 311 multiple-choice questions obtained from the 2023 in-service examination administered by the American Academy of Periodontology (AAP). The dataset of in-service examination questions was accessed through Nova Southeastern University's Department of Periodontology. ChatGPT3.5 and ChatGPT4 answered 57.9% and 73.6% of in-service questions correctly on the 2023 Periodontics In-Service Written Examination, respectively. While ChatGPT4 showed a higher proficiency compared to ChatGPT3.5, both chatbot models leave considerable room for misinformation with their responses relating to periodontology. The findings of the study encourage residents to scrutinise the periodontic information generated by ChatGPT to account for the chatbot's current limitations.

<https://doi.org/10.1038/s41415-024-7259-1>

Artificial intelligence in the detection of caries

Albano D, Galiano V, Basile M *et al.* Artificial intelligence for radiographic imaging detection of caries lesions: a systematic review. *BMC Oral Health* 2024; **24**: 274.

AI-based models have demonstrated good diagnostic performance, potentially being an important aid in carious lesion detection.

This systematic review evaluated the diagnostic performance of artificial intelligence (AI) models designed for the detection of caries lesions (CL). An electronic literature search was conducted for retrospective, prospective and cross-sectional studies published until January 2023. Twenty articles were evaluated. Five studies were performed on periapical radiographs, nine on bitewings, and six on orthopantomography. The number of imaging examinations included ranged from 15 to 2,900. Four studies investigated ANN models, 15 CNN models, and 2 DCNN models. Twelve were retrospective studies, six cross-sectional and two prospective. The following diagnostic performance was achieved in detecting CL: sensitivity from 0.44 to 0.86, specificity from 0.85 to 0.98, precision from 0.50 to 0.94, Positive Predictive Value 0.86, Negative Predictive Value 0.95, accuracy from 0.73 to 0.98, area under the curve from 0.84 to 0.98, intersection over union of 0.3-0.4 and 0.78, Dice coefficient 0.66 and 0.88, F1-score from 0.64 to 0.92. Most studies exhibited a low risk of bias.

<https://doi.org/10.1038/s41415-024-7258-2>

LGBTQ competency into the dental curriculum

Salter R O, Barham L, Young D L, McIntosh C, Butler C J. Integrating lesbian, gay, bisexual, transgender, and queer (LGBTQ) competency into the dental school curriculum. *J Dent Educ* 2024; DOI: 10.1002/jdd.13476.

Introducing an early intervention LGBTQ competency course in the dental curriculum is an effective method of improving students' awareness and self-confidence in working with LGBTQ patients.

This study examined dental students' and residents' self-reported clinical preparedness, prejudicial attitudes (implicit and explicit), and knowledge of health disparities that exist in the lesbian, gay, bisexual, transgender, or queer (LGBTQ) community using the Lesbian, Gay, Bisexual, Transgender Development of Clinical Skills Scale (LGBT-DOCSS) prior to and after the presentation of an LGBTQ competency course. A total of 178 dental students at a private US dental school participated in the course and completed both pre-course survey and post-course survey. Sixty-seven percent of the students reported having formal training in LGBTQ competency prior to completing the pre-training survey. The results of the LGBT-DOCSS in this population following intervention training revealed an increased feeling of clinical preparedness, decreased bias, and increased knowledge of health disparities in the LGBTQ community. Knowledge of LGBTQ health issues increased significantly among pre-clinical students.

<https://doi.org/10.1038/s41415-024-7260-8>