

Smoking Elevates the Risk of Dysbiosis Associated with Dental Decay

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Abstract : Background and Objective: The impact of smoking on the shift in oral microbial composition has been questioned. This study aims to compare the oral microbiome between Turkish patients with dental caries and healthy individuals. Materials and Methods: An observational case-control study was conducted from January to June 2024, involving 270 young adults (180 with dental caries and 90 healthy controls). Participants were matched by age, gender, education, sugar consumption, and tooth-brushing habits. Oral samples were collected using sterilized swabs and preserved in a PBS-glycerol solution. Biochemical testing included culturing samples on various media and performing tests to identify bacterial species. The association of smoking with oral health was examined, and the smoking-related shift in oral microbiota was assessed statistically. Results: The study found that smoking was significantly associated with dental caries, with smokers being 1.28 times more likely to develop caries compared to non-smokers ($p=0.04$). Regarding oral microbiota, patients with dental caries showed a higher frequency of *Escherichia coli*, *Pseudomonas aeruginosa*, Actinobacteria, *Streptococcus mutans*, *Streptococcus sobrinus*, *Lactobacillus acidophilus*, and *Streptococcus viridans* ($p \leq 0.01$). Conversely, *Neisseria sp.* and *Micrococcus luteus* were less frequently observed in patients compared to healthy controls ($p \leq 0.02$). Other bacteria, such as *Staphylococcus aureus*, *Staphylococcus epidermidis*, and *Lactobacillus*, were more common in patients, although this was not statistically significant. Conclusion: Smoking significantly impacts oral health by promoting dysbiosis, increasing cariogenic bacteria, and reducing beneficial bacteria, which contributes to the development of dental caries.

Keywords : smoking, dysbiosis, bacteria, oral health, dental decay.

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