

## DEMOGRAPHIC FACTORS ON CLINICALLY IMPORTANT MICROFLORA IN DENTURE BIOFILMS USING PCR TECHNIQUE

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Edentulism, the loss of natural teeth in humans, is a pressing global public health issue, especially affecting older adults. Removable complete dentures commonly address this problem but are also prone to microbial colonization, forming biofilms. These biofilms act as reservoirs for potentially pathogenic microorganisms, posing risks of systemic and localized diseases. This study employed a culture-independent PCR-based method to investigate the prevalence of clinically significant microorganisms in complete denture biofilms and the impact of demographic factors on their prevalence. Samples were collected from 35 denture wearers without any diagnosed clinical implications at the Dental Teaching Hospital, Peradeniya, with relevant demographic data gathered via questionnaires. The study included 10 male and 25 female participants, aged 56-85, who had used complete dentures for over one year. DNA was directly extracted from the biofilm samples scraped from the adherent denture surface. PCR using species-specific primers targeting the *16S rRNA* gene for bacteria and the *KER1* gene for *Candida albicans* was performed. *Streptococcus mutans* (28/35), *Porphyromonas gingivalis* (24/35), *Helicobacter pylori* (8/35), *Escherichia coli* (25/35), *Candida albicans* (11/35), and *Staphylococcus aureus* (29/35) were identified within the biofilms. Statistical analyses revealed associations between demographic factors (sex, age, denture age, and hygiene) and microbial colonization. Visual assessment of denture plaque accumulation was used to evaluate denture hygiene. Significant associations were found between poor denture hygiene and higher prevalence of *S. mutans*, *H. pylori*, *P. gingivalis*, and *E. coli* ( $\chi^2$  of 5.62, 9.35, 4.81 and 12.45, respectively), as well as between older denture age and increased presence of *S. mutans*, *P. gingivalis*, and *H. pylori* ( $\chi^2$  of 11.22, 5.74 and 5.1, respectively). A positive correlation was noted between denture age and hygiene ( $r = 0.47$ ,  $p < 0.05$ ), while sex showed no significant association with denture hygiene ( $r = 0.03$ ,  $p > 0.05$ ). These findings emphasize the importance of regular denture maintenance and hygiene in preventing microbial-related complications among older adults.

**Keywords:** Denture hygiene, DNA barcoding, Edentulism, Microbial biofilms, Oral microbiome