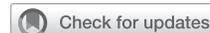


# ORAL/SYSTEMIC CONNECTIONS

## Reducing oral opportunistic pathogens after stroke



### BACKGROUND

The oral microbiome is complex and dynamic, but in health it is also balanced between organisms that live commensally with the host and those that facilitate the development of pathologic conditions. Changes in systemic health or the oral environment can result in imbalances that lead to oral or systemic pathology. Stroke is associated with changes in the oral environment related to the neurologic deficit that is produced. As a result, impaired upper extremity and cognitive function can lead to an accumulation of dental plaque, leading to plaque-associated diseases such as dental caries and periodontitis. The effectiveness of oral hygiene interventions against oral opportunistic pathogens was tested in stroke survivors.

### METHODS

Eighty-six hospitalized stroke patients (mean age 53 years) in 5 public hospitals in Malaysia were randomly divided into 2 groups. The control group received standard oral hygiene (manual toothbrush and toothpaste), and the test group received intense oral hygiene (powered toothbrush and 1% chlorhexidine oral gel). Clinical assessments were done at baseline as well as 3 months and 6 months after the trial began. Oral rinse samples were evaluated at the same time points to determine the composition of the patients' microbiome.

### RESULTS

Sixty-eight patients (79.1%) did not wear any removable dental prostheses. Mean decayed-missing-filled teeth (DMFT) score was 12.98 at baseline and 13.06 after 6 months, with no significant differences over time. The percentage of tooth sites with moderate to abundant dental plaque significantly decreased for both groups between baseline and the 6-month clinical evaluation.

Although the prevalence of yeast, *Staphylococcus aureus*, and aerobic and facultative gram-negative bacilli (AGNB) was similar in the 2 groups at baseline, a significant difference was noted in the prevalence of yeast between the 2 groups after 6 months. The prevalence between baseline and 6 months was not significantly altered.

A significant difference in the prevalence of *S aureus* and AGNB was found in the test group over time, but was seen only in AGNB in the control group. No significant difference in the prevalence of *S aureus* and AGNB between the 2 groups was shown at each evaluation point.

Thirty patients had *Candida* present, with *C albicans* the dominant species throughout the study. A significant decline in the

prevalence of *C albicans* occurred between the baseline and 6-month evaluations. Although the prevalence of *C tropicalis* also declined significantly between baseline and 6 months, that of *C glabrata* showed no significant difference over that time period.

AGNB species seen most often were *Klebsiella pneumoniae* and *Enterobacter aerogenes*. The prevalence of *K pneumoniae* was reduced significantly from baseline to 6 months in the test group, but other AGNB species showed no such reduction. The test group had lower levels of *K pneumoniae* than the control group at the end of the trial, but the difference was not statistically significant.

### DISCUSSION

The test group's intense oral care resulted in a lower likelihood that yeast prevalence would increase after 6 months of treatment. Oral hygiene using a powered toothbrush and 1% chlorhexidine oral gel was effective in reducing oral opportunistic pathogen presence in the mouths of stroke patients.

#### Clinical Significance

The ability to reduce oral opportunistic pathogens by undertaking an intensive oral care regimen in stroke patients holds promise for protecting other incapacitated patients from oral problems. Because of reduced fine motor skills and cognitive impairment after stroke, oral care can be compromised and result in an increase in oral infections. These patients then are at higher risk for poor systemic health as well. Often aspiration pneumonia and bacteremia can complicate health status for patients already dealing with stroke or other disorders. Keeping these patients' oral health intact or even improving it offers an important positive move toward ensuring that their health isn't further compromised by an overabundance of oral pathogens.

Ab Malik N, Razak FA, Yatim SM, et al: Oral health interventions using chlorhexidine—effects on the prevalence of oral opportunistic pathogens in stroke survivors: A randomized clinical trial. *J Evid Base Dent Pract* 18:99-109, 2018

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