NHS dental crisis causing anxiety about nation's oral health

The Oral Health Index, published by the Wrigley Oral Healthcare Programme to coincide with World Oral Health Day on 20 March, shows broad public disenchantment with dental services across the country.

While 68% of people say they feel more confident with a healthy smile, nearly a third of people (32%) report being stressed or anxious about the state of their own oral health.

Furthermore, one in ten people (10%) in England have missed more than two weeks of work in the past three years due to dental problems, a national survey has found. The younger workforce has been hit twice as hard, with one-in-five 16–34-year-olds reported to have missed at least a fortnight of work over oral health problems.

Two-thirds of respondents (64%) believe the country is experiencing a crisis in dental service provision – a broadly similar proportion to 2022's Index (67%).

An overwhelming majority (72%) of people want to see more investment from Government in dental services, with over three in five (62%) wanting dental professionals to be paid more for NHS work, three-quarters (76%) thinking more dental professionals should be recruited, and nearly half (46%) supporting fluoridation as a measure for supporting good oral health.

Economic research commissioned by the Wrigley Oral Healthcare Programme last year showed that rolling out supervised toothbrushing programmes for children in targeted areas, expanding the coverage of water fluoridation schemes, and encouraging the public to chew sugar-free gum could together save the NHS over £50 million per year.[1] NHS patients could collectively save £95.9 million a year.[1]

Speaking on publication of the Oral Health Index on behalf of the Wrigley Oral Healthcare Programme, Dr Ben Atkins said: 'Without regular dental check-ups, smaller and preventable oral health issues can easily turn into much larger problems that require urgent and lengthy treatments. This is leaving people in pain and resulting in them taking extended periods of time off work, too.

'The Oral Health Index's findings have underscored the importance of addressing the crisis in NHS dentistry.

'A mix of investment in services and preventative programmes is needed, and we want to see the contribution that sugar-free chewing gum can make to good oral health reflected in national guidance.'

British Dental Association Chair Eddie Crouch said: 'The collapse of NHS dentistry isn't just hurting millions of patients, but the wider economy. Every time Ministers take a miserly approach to funding it hits other parts of their balance sheet. Not just the costs hitting our hospitals and GP surgeries, but the millions of lost hours in our workplaces.'

References

1. Woolley N, Camplejohn A. The economic value of good oral health. 2023. Available at: https://www.frontier-economics.com/uk/en/news-and-insights/news/news-article/?nodeId=10334# (accessed March 2024).

Bacterial interactions in bad breath identified

In a study published this year in *mSystems*, researchers from Osaka University in Japan revealed that the interaction between two common types of oral bacteria leads to the production of a chemical compound that is a major cause of bad breath.[1]

Bad breath is caused by volatile compounds that are produced when bacteria in the mouth digest substances like blood and food particles. One of the smelliest of these compounds is methyl mercaptan (CH_3SH), which is produced by microbes that live around the teeth and on the surface of the tongue. However, little is known about which specific bacterial species are involved in this process.

The researchers have discovered that a metabolite produced by the commensal oral bacterium *Streptococcus gordonii* activates another bacterial species, *Fusobacterium nucleatum*, to produce the malodorous compound methyl mercaptan.

Lead author of the study, Takeshi Hara, said: 'Most previous studies investigating CH_3SH-producing oral bacteria have used isolated enzymes or relatively small culture volumes. In this study, we aimed to create a more realistic environment in which to investigate CH_3SH production by major oral bacteria.'

To do this, the researchers developed a large-volume anaerobic co-culture system that enabled them to test interactions between multiple different types of bacteria that live in the mouth. This system was able to test both direct, physical interactions among the bacteria, as well as whether these species could affect each other from a distance, for example by secreting active substances.

Senior author Masae Kuboniwa said: 'The results were very intriguing. We found that *Fusobacterium nucleatum* produces large quantities of CH_3SH in response to *Streptococcus gordonii*, another oral bacterium.'

By using stable isotope tracers and analysing gene expression, the researchers showed that *S. gordonii* releases a substance called ornithine that prompts *F. nucleatum* to produce more of a molecule called polyamine. Because *F. nucleatum* needs methionine to produce polyamine, this enhanced polyamine production activates its methionine salvage pathway, which in turn results in increased CH_3SH production.

Dr Hara said: 'Taken together, these findings suggest that CH_3SH production in the mouth is driven by the interaction between *S. gordonii* and *F. nucleatum*.'

Understanding how these two bacterial species work together to cause bad breath could be helpful in developing ways to treat or prevent bad breath. In addition, given that bad breath is often associated with periodontal disease, treating this symptom early could help prevent more serious damage in the future.

References

1. Hara T, Sakanaka A, Jamont R J, Amano A, Kuboniwa M. Interspecies metabolite transfer fuels the methionine metabolism of Fusobacterium nucleatum to stimulate volatile methyl mercaptan production. *mSystems* 2024; doi: 10.1128/msystems.00764-23.