

Mouthwash and diabetes – a cause for concern?

Mouthwash use and risk of diabetes

Br Dent J 2018; **225**: 923-926 <http://dx.doi.org/10.1038/sj.bdj.2018.1020>



simply breath fresheners. The recorded data also stems from patients' self-reported use, which may not be reliable or accurate.

Professor Preshaw also rightly raises the point that the population studied were already people at high risk of diabetes. The established link between periodontitis and diabetes skews the data, as there was already a high prevalence of periodontitis in the sample studied. It is probable that their disease status may have put them at risk of developing pre-diabetes or diabetes, regardless of their mouthwash use. This point is further emphasised after accounting for the fact that the subjects were either overweight or obese, which are known risk factors for diabetes.

Professor Preshaw voiced that further research in this field is indicated, as so far no causative relationship between mouthwash use and diabetes has been demonstrated. In the meantime, he recommends that we continue to advocate the priority mechanical plaque control has over chemical methods. Finally, if an alarmed patient does happen to come across this on the news, it is important to remember that there is insufficient data present currently to stop patients from using mouthwash due to risks of detrimental health effects.

By Helena Condotta

How could mouthwash possibly put one at risk of diabetes? It is not surprising that even the slightest suggestion of this association leaves one in confusion – whether you're a dentist or not.

In late 2017, researchers in Puerto Rico conducted a longitudinal study monitoring 945 overweight or obese adults. A full periodontal examination was carried out and data obtained for each patient's oral hygiene routine, including mouthwash use. After a 3-year review, they concluded that individuals who used mouthwash twice or more daily had a 50% increased risk of progression to pre-diabetes or diabetes, in comparison to those who used mouthwash less than twice daily or not at all.

Intrigued by this finding, Philip Preshaw, Professor of Periodontology at Newcastle University, contacted the author of the Puerto Rico study to find out more. In his *BDJ* Opinion piece Professor Preshaw talks about what he learnt.

Firstly, he talks about the significance of nitric oxide (NO), a molecule important in cardiovascular health and energy metabolism. Two mechanisms of NO production were described – firstly as a by-product of the oxidation of the amino acid L-arginine to L-citrulline, and secondly, through the salivary nitrate-nitrite-nitric oxide pathway. Certain species of oral bacteria are important in this pathway, as they are involved in the reduction of dietary nitrate found in saliva to nitrite. Once the salivary nitrite is swallowed, it enters the digestive and circulatory system, and is further reduced to form NO. The elimination of oral bacteria by mouthwash leads to a decrease in NO. In relation to diabetes, an animal experiment found that reduced bioavailability of NO was found to be associated with insulin resistance. This demonstrates a plausible explanation to the link between long-term mouthwash use and diabetes.

While the theoretical explanation appears convincing, it is also important to consider the limitations of the research. Professor Preshaw notes that the study did not specify the type of mouthwash used by the patients, or the reason behind mouthwash use. This leads to a lack of information on whether the mouthwashes were anti-bacterial or just