- Dental care / Hygiene / Brain—diseases



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THE MOUTH-BRAIN CONNECTION

With scientific evidence showing that poor oral hygiene is directly related to diseases such as Alzheimer's, functional medicine practitioner Pete Williams urges us to look after our teeth and gums.

WE'VE ALL BEEN TAUGHT TO look after our teeth to reduce the risk of caries and the need for fillings and other dental procedures. But who would have thought that the twice-daily act of cleaning your teeth, the annual check at the dentist and routine visits to the hygienist are becoming recognised as one of the most important things you can do to reduce your risk of Alzheimer's as well as other chronic diseases?

Over the past couple of decades, scientific research has consistently shown that what happens in your mouth doesn't stay in the mouth; it is now recognised that gum disease can increase your risk of ill health and disease. This was demonstrated by a Korean study involving 1.6 million participants aged 65 and above, all with gum disease, who were followed for more than 17 years. Half of the study participants were treated with dental care and half received no treatment. Adjusting for all other health influences, the group not treated had nearly twice the risk of developing Alzheimer's.

With nearly 50 per cent of the adult population over 50 years of age having some degree of gum disease, from minimal to significant, this is an issue that should not be ignored. Many of us are already feeling the effects of gum recession, bleeding gums, increased dental visits and tooth loss. Scientific research correlates the amount of tooth loss directly to the increased risk of Alzheimer's. This means if you're interested in reducing your risk of Alzheimer's, looking after the health of your mouth ought to be high on your list.

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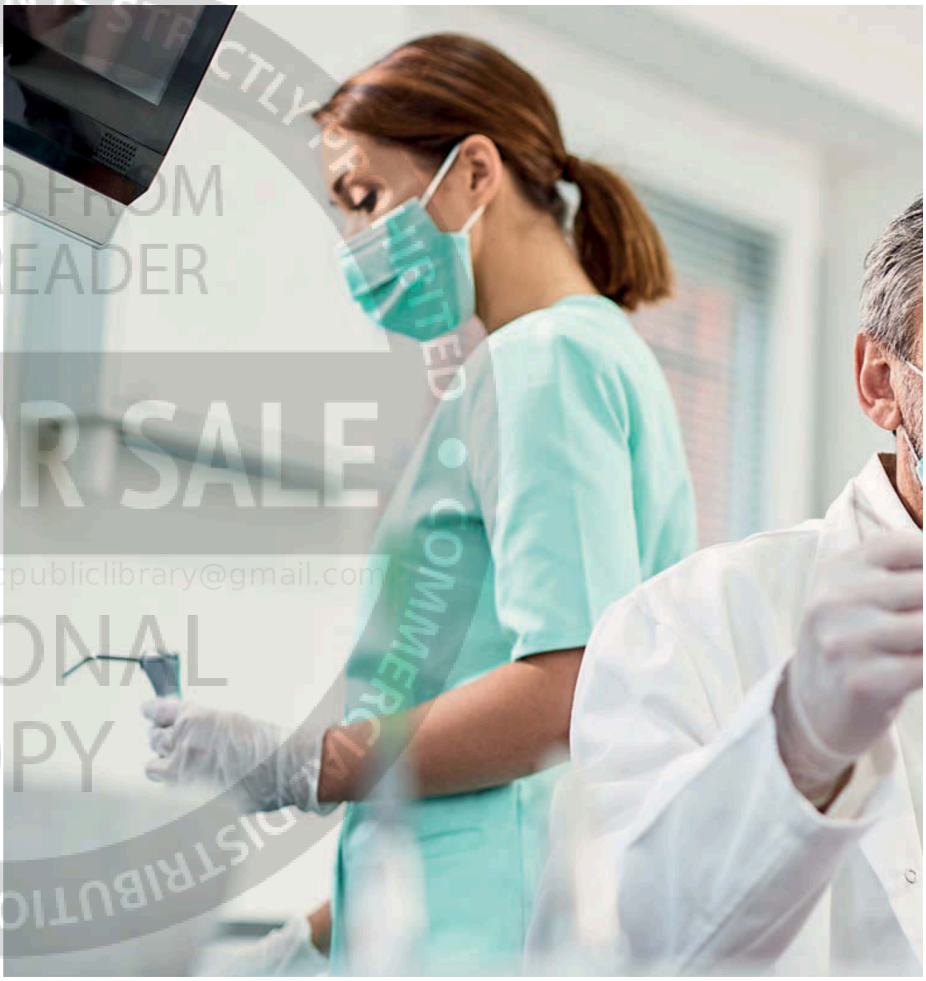

WHAT TO WATCH FOR...

It's time to visit your dentist if you have any of the following symptoms:

- Gum pain, bleeding, sore or swollen gums that pull away from your teeth.
- Loose teeth.
- Consistently bad breath.
- Dry mouth and oral thrush (both related to type-2 diabetes). Consider whether you are taking any medications that reduce water in the body, as saliva is very protective to the mouth.

IMPORTANT LINKS

Scientists now see gum disease as a "keystone disease" accelerating the mechanisms that cause other diseases to develop. In fact, all chronic diseases such as heart disease, Alzheimer's dementia, rheumatoid arthritis, obesity, type 2 diabetes and colon cancer, to name a few, are influenced by what is happening in your mouth. Evidence shows that type 2 diabetes and gum disease are literally the same thing in terms of the underlying mechanisms that either worsen or improve symptoms. In other words, if your blood sugar control gets worse, so does gum disease. By the same token, improving the health of your gums can help improve your blood sugar control and help manage type 2 diabetes.

THE GUT-MOUTH MICROBIOME

So how does poor oral health cause systemic disease? Your mouth is the start of your digestive tract; it's the place where most of your immune system – up to 70 per cent – resides. This is where your immune system samples and controls visitors from the outside world, deciding what is friend or foe. Your digestive tract is a tube that, if pulled straight, you'd be able to look down mouth to bottom. In effect it is a tennis court-sized border that is controlled by your gut microbiome and immune system, allowing things you need to pass into your body. It is also responsible for keeping out foreign objects and pathogens: imagine the busiest border control, with dangerous invaders in such unimaginable numbers trying to cross without permission into your body!

Your mouth holds the second most important and diverse microbial community in the body. If your diet is poor, you change the bacterial communities in your mouth, resulting in more dysbiosis. This creates more opportunity for pathogenic bacteria to take up residence. Once this happens, they start to signal to more of their pathogenic friends to join the party through a process called quorum sensing.

Your teeth are the only surface in the human body that do not shed their cellular surface, therefore bacteria stick much more easily, creating very solid homes (plaque) which are difficult to remove. This is why you need to go to the hygienist to have them physically removed.

With these pathogenic bacteria in residence, the ability of your immune system to stay calm and do its normal job of controlled vigilance is compromised. This results in the immune system becoming more responsive and overactive. Gum disease is therefore the balance of how much pathogenic bacteria you have and how your immune system responds to these pathogens. People with gene variations that make their immune system respond more aggressively to pathogenic bacteria will experience more damage to gums, quicker recession of gums, and more likelihood of bleeding.

HIDDEN PATHOGENS

Once your gums start to bleed or recede, you develop pockets around your teeth and the barrier in your

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mouth is compromised. Once this happens, these pathogenic bacteria can slip through the mouth and travel around the body, including ending up in your brain. This is what we call bacterial translocation, which is a major mechanism that contributes to disease.

One oral pathogen in particular, Porphyromonas Gingivalis (PG), is associated with an increased risk of Alzheimer's. PG is very good at hiding from your immune system. It readily gets into the brain – crossing the blood brain barrier – and once there releases toxic substances that require a response from the brain's immune system.

This response results in increased inflammation, creating neuroinflammation, which in the long term damages the brain and leads to Alzheimer's and other dementias. You may have heard of the amyloid beta protein, a protective antimicrobial protein. The presence of this protein is indicative of Alzheimer's and the reason for its presence in the brain is that it is trying to protect the brain from invaders. Hence many scientists see Alzheimer's as an infective disease.



Pete Williams, M.Med.Sci, CSCS, IFM Certified Practitioner, is a Bredesen Trained Practitioner and founder of Functional Medicine Associates London (functional-medicine.associates). He specialises in the relationship between oral and systemic disease, with a particular focus on Alzheimer's. Follow Pete at instagram.com/petewilliams_fma.

IMPROVE YOUR ORAL HEALTH

- Keep your dental appointments and visit the hygienist as often as advised.
- Get advice on your breathing and airway efficiency. If you are mouth breathing at night or snoring, that may be problematic for your oral and systemic health.
- Don't smoke as this boosts gum disease progression.
- Reduce alcohol intake to protect the bacterial communities in your mouth.
- Cleaning your teeth twice a day for two minutes is key. Dentists always recommend electric toothbrushes as they are more effective. Some manufacturers add blue and red lights to their toothbrush heads, which have good evidence for killing pathogenic bacteria and helping gums to heal.
- Floss and use interdental sticks to remove food stuck between the teeth.
- Eat a diversity of plant foods. Polyphenols in plants help to create a healthier oral microbiome.
- Drink ginger and green tea as these help benefit the health of your mouth.
- If you have gum disease, an oral probiotic may be advised.

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