

# Take Care of Your Mouth to Protect Your Brain

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## STORY AT-A-GLANCE

- › The delicate balance of bacteria in your mouth is as important to your health as your gut microbiome
- › Periodontal disease is initiated by an increase in *Porphyromonas gingivalis*, a bacteria that also impairs your innate immune response and increases your risk of Type 2 diabetes, heart disease, pneumonia, autoimmune conditions and mental health disorders
- › When bacteria that cause tooth decay and gum disease enter into your circulatory system, your liver releases C-reactive proteins, which have inflammatory effects. Inflammation, in turn, is known to be a disease-causing force leading to most chronic illness
- › *P. gingivalis* has been found in the brains of Alzheimer's patients, and may be a causative contributor to the condition. Failing to brush twice a day has been shown to increase the risk of dementia by as much as 65%, compared to brushing three times a day
- › A recent study involving 40,175 middle-aged adults with no history of stroke or dementia found that people with poor oral health had higher levels of neuroimaging markers associated with white brain matter injury. Because these markers precede and are established risk factors of stroke and dementia, the results suggest that oral health is a promising target for very early interventions focused on improving brain health

It's unfortunate how many fail to fully appreciate the importance oral health has on their overall health. The fact of the matter is, the delicate balance of bacteria in your mouth is as important to your health as your gut microbiome.

When certain bacteria become overabundant, various problems start to develop, and not just in your mouth. Other parts of your body can also be severely affected.

For example, periodontal disease, which affects the soft tissues and bone in your mouth, is initiated by an increase in *Porphyromonas gingivalis*, a bacteria that also impairs your innate immune response<sup>1</sup> and increases your risk of Type 2 diabetes,<sup>2,3</sup> heart disease,<sup>4</sup> pneumonia,<sup>5,6</sup> [autoimmune conditions and mental health disorders](#).

## **Oral Bacteria Can Fuel Systemic Inflammation and Neurodegeneration**

When bacteria that cause tooth decay and gum disease enter into your circulatory system, your liver releases C-reactive proteins, which have inflammatory effects. Inflammation, in turn, is known to be a disease-causing force leading to most chronic illness, including neurodegenerative diseases such as Alzheimer's disease (AD), Parkinson's disease (PD) and multiple sclerosis (MS). As reported in a 2022 scientific review:<sup>7</sup>

*"It has been proposed that periodontal disease can initiate or contribute to the AD pathogenesis through multiple pathways, including key periodontal pathogens.*

*Dysbiotic oral bacteria can release bacterial products into the bloodstream and eventually cross the brain-blood barrier; these bacteria can also cause alterations to gut microbiota that enhance inflammation and potentially affect brain function via the gut-brain axis.*

*The trigeminal nerve has been suggested as another route for connecting oral bacterial products to the brain ... Clinical evidence has suggested that patients with periodontitis are at a higher risk of developing PD and MS.*

*This nexus among the brain, periodontal disease, and systemic inflammation heralds new ways in which microglial cells, the main innate immune cells, and*

*astrocytes, the crucial regulators of innate and adaptive immune responses in the brain, contribute to brain pathology.*

*Currently, the lack of understanding of the pathogenesis of neurodegeneration is hindering treatment development. However, we may prevent this pathogenesis by tackling one of its possible contributors (periodontitis) for systemic inflammation through simple preventive oral hygiene measures.”*

## **Poor Oral Health Damages Your Brain**

Indeed, many studies have linked poor oral health to an increased risk of dementia.<sup>8</sup> A 2019 study,<sup>9</sup> which discovered *P. gingivalis* in the brains of Alzheimer’s patients, speculated that the bacteria, responsible for periodontal disease, may be a causative contributor to Alzheimer’s.

Toxic proteases from the bacterium called gingipains were also found, “and levels correlated with tau and ubiquitin pathology.” These gingipains were also shown to have neurotoxic effects in and of themselves, both in vivo and in vitro. Using a synthetic gingipains inhibitor, the researchers were able to reduce neuroinflammation by lowering the bacterial load of *P. gingivalis*.

Another study<sup>10</sup> found that failing to brush twice a day increased the risk of dementia by as much as 65%, compared to brushing three times a day. Most recently, an observational study<sup>11</sup> involving 40,175 middle-aged adults with no history of stroke or dementia, found that people with poor oral health had higher levels of neuroimaging markers associated with white brain matter injury.

**“Because the neuroimaging markers evaluated in this study precede and are established risk factors of stroke and dementia, our results suggest that oral health ... may be a promising target for very early**

**interventions focused on improving brain health.”**

**~ Neurology January 23, 2024**

As noted by the authors:<sup>12</sup>

*"Because the neuroimaging markers evaluated in this study precede and are established risk factors of stroke and dementia, our results suggest that oral health, an easily modifiable process, may be a promising target for very early interventions focused on improving brain health."*

Authors of an accompanying editorial also noted:<sup>13</sup>

*"The fact that these imaging changes are seen in asymptomatic persons offers the hope that if the association is causal, interventions to improve oral health could pay huge dividends in subsequent brain health."*

## **Optimize Your Diet for Oral Health**

Caries and periodontal disease are primarily induced by a poor diet combined with poor oral care, so both of these factors need to be addressed. To optimize your diet for oral health and mitochondrial function, you'll want to:

- Radically reduce your intake of **refined sugars** and processed foods, as they fuel the growth of disease-causing bacteria in your mouth. Instead, focus on eating real food, meaning whole, unprocessed food.
- Optimize your vitamin D, K2, magnesium and calcium levels. These nutrients work synergistically to help protect your gums, teeth and bones. Calcium strengthens your bones but only works when it gets into the right places. Vitamin K2 directs calcium into bone and prevents it from being deposited along blood vessel walls.

Vitamin D deficiency increases the risk of inflammatory diseases and is associated with a higher risk of disease. Your vitamin D3 level should ideally be above 60 ng/mL for proper bone formation. If you cannot keep your serum levels at or above

60 ng/mL using sensible sun exposure, consider using an oral vitamin D3 supplement.

- Increase your intake of vitamin C and/or CoQ10 if you're struggling with bleeding gums, as this is a common sign of both vitamin C and CoQ10 deficiency.

## **Toothbrushing Do's and Don'ts**

When it comes to oral health, regular toothbrushing is first on the list. Research suggests the ideal brushing time is two minutes, and the ideal pressure is 150 grams, which is about the weight of an orange. Brushing your teeth too hard and longer than necessary may cause more harm than good, so there's no reason to brush harder or longer.

Ideally, brush twice or three times a day – in the morning, evening, and 30 to 60 minutes after your main meal. The reason why brushing immediately after eating is not recommended is because doing so may weaken rather than strengthen your tooth enamel.

This counterintuitive finding was revealed in a 2004 study,<sup>14</sup> which found that brushing your teeth too soon following eating or drinking, especially acidic foods and drinks such as soda, accelerates dentin erosion.

As for toothpaste, I recommend using nonfluoridated versions. Also check the ingredient list for other harmful ingredients such as triclosan, sodium lauryl sulfate, propylene glycol, diethanolamine, parabens and microbeads. Your safest bet is make your own toothpaste, which is both simple and inexpensive.

For example, you could simply mix coconut oil and baking soda with a pinch of Himalayan salt. High-quality peppermint essential oil can be added for flavor and cavity prevention. Start with a couple of tablespoons of coconut oil and baking soda, and add more of one or the other until you get an agreeable consistency. (Slightly firmer consistency tends to be easier to use.) Here's another, clay-based, recipe by MindBodyGreen:<sup>15</sup>

## Ingredients

- 1/2 cup bentonite clay
- 1/8 teaspoon salt
- 2 teaspoons baking soda
- 2/3 cup water
- 1/4 cup coconut oil
- 1 teaspoon stevia (optional)
- 1 to 4 drops peppermint essential oil

## Preparation

Mix the clay and salt in a bowl. Add the water. Mix well. Add the rest of the ingredients and mix until it forms a paste. Store it in a jar with a lid. Every time you go to use it, spoon some onto your toothbrush. Dampen the paste by putting your brush under some gently running water and brush as usual.

## The Importance of Flossing

While most people brush their teeth every day, the practice of flossing is more frequently overlooked. This is unfortunate, as flossing is perhaps even more important than brushing.

It removes bacterial precursors of plaque, which eventually turns into hard tartar that cannot be removed by regular brushing or flossing. Tartar is what eventually causes the damage that leads to decay and tooth loss. I recommend using a dental floss covered in vegan wax [to avoid toxic PFAS chemicals](#). To ensure a proper floss:

- Use a piece of floss that is about 15 to 18 inches long and wrap each end around your index fingers. If you have wider spaces between your teeth, use Super Floss,

which is thicker

- Gently slide the floss between your teeth. Avoid snapping the floss down into your gums
- At the gum line, wrap the floss around the side of the tooth in the shape of a “C,” and gently but firmly slide the floss up and down the tooth and side-to-side, making sure you get down into the gum line as well. Make sure you scrub both sides of the adjacent teeth before moving on to the next set
- Repeat on the rest of your teeth, including the back side of your last tooth

If dexterity is an issue, use soft plaque removers instead of floss. Similar to toothpicks, they allow you to clean between your teeth with one hand. If brushing, flossing or using a plaque remover causes your gums to bleed, this is a warning sign that bacteria are at work, causing damage.

If left to fester, it can easily cause chronic inflammation elsewhere in your body. The answer is to gently floss and brush more often, until your gums no longer bleed from brushing or flossing. If bleeding persists longer than a week, see a dentist.

An alternative to floss is to use an oral irrigator. Here, you have the option of adding a couple of tablespoons of 3% hydrogen peroxide to the water tank. Hydrogen peroxide was first used as a treatment for gum disease in 1913, and is still used in the treatment of both gingivitis (gum inflammation) and periodontitis.<sup>16</sup>

Rinsing or irrigating your mouth with diluted hydrogen peroxide is an effective way to kill the harmful bacteria associated with these conditions. Just be sure to dilute it with plain water and do not swallow it.

## **Caring for Your Teeth and Gums Beyond Brushing and Flossing**

Other helpful strategies include:

**Ozonated oil** — Ozone gas can effectively treat dental decay and gum disease<sup>17</sup> but must be done by a holistic dentist, as inhaling the gas can be dangerous.

For home use, ozonated oil, available on Amazon and other online retailers, is a good alternative, as it's safe and easy to use. You can rub it into the gum line with your finger, a Q tip or toothpick, or smear some on a piece of floss to get the ozone down between your teeth.

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**Methylene blue** — Used as a mouthwash, methylene blue, in a 0.5% to 1% concentration, has been shown to deactivate harmful microorganisms that lead to periodontitis.<sup>18,19</sup>

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**Xylitol** — This natural sugar alcohol has been shown to reduce and even reverse early dental caries by inhibiting the proliferation of mutans streptococci (MS) in plaque and saliva, and reducing the adhesion of microorganisms to the surface of your teeth.<sup>20</sup>

You can easily find xylitol toothpastes, mouthwashes, oral tablets and chewing gum. Just make sure the products you buy do not contain fluoride or triclosan, as both are toxic. Also keep xylitol-containing products away from pets. It's extremely toxic to dogs in particular.

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**Oil pulling** — Oil pulling is a gentle, evidence-based way to reduce plaque, gingivitis and bad breath.<sup>21,22,23,24</sup> According to Ayurvedic tradition, oil pulling may also improve more than 30 systemic diseases, including inflammation.<sup>25</sup>

Ideally, you'll want to do it for 15 to 20 minutes per day, but work your way up slowly. It may take a while before you get used to working the muscles in your cheeks for that long. When done, spit the oil into a trash can or toilet (spitting it into the sink may cause your drain to clog), then rinse your mouth with water and brush your teeth as usual.

While coconut oil is routinely recommended for oil pulling, MCT oil may be an even better alternative. While both have antiseptic, antimicrobial and anti-inflammatory properties, compared to coconut oil, MCT oil contains more fatty acids, which makes



it more effective at trapping harmful bacteria and disrupting biofilms.<sup>26</sup> It's also liquid, making it easier to swish around your mouth.

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**Peppermint essential oil** – [Peppermint oil](#) extract has been shown to be significantly more effective in preventing development of biofilm that may lead to cavities and bad breath than the mouthwash chemical chlorhexidine.<sup>27</sup>

A simple homemade mouthwash by Lindsey Elmore<sup>28</sup> can be made using half a cup of distilled water, 2 teaspoons baking soda, half a teaspoon sea salt, four drops of peppermint essential oil, three drops of clove essential oil, two drops of tea tree essential oil, and xylitol to taste. Simply mix the ingredients in a glass bottle and shake well before each use. Swish and spit out. Do not swallow.

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**Homeopathic tissue salts** such as silica, calcarea fluorica (calcium fluoride), calcium phosphate and calcium carbonate can also help boost oral health from the inside out. (Calcium fluoride should not be confused with the chemical formulation of sodium fluoride found in toothpaste, which is toxic and carries a poison warning).

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**Always breathing through your nose** – While this may seem out of context, how you breathe can have a big impact on your oral health. Chronic mouth breathing dries out your mouth, thereby encouraging microbial growth that leads to caries and periodontitis. To learn more, see [“Top Breathing Techniques for Better Health.”](#)

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In closing, if you've been lax about your oral health, make this the year you grab the proverbial bull by the horn and really make an effort to address the health of your mouth. It's a relatively simple prevention strategy that can pay big dividends by preventing serious and costly health problems.

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