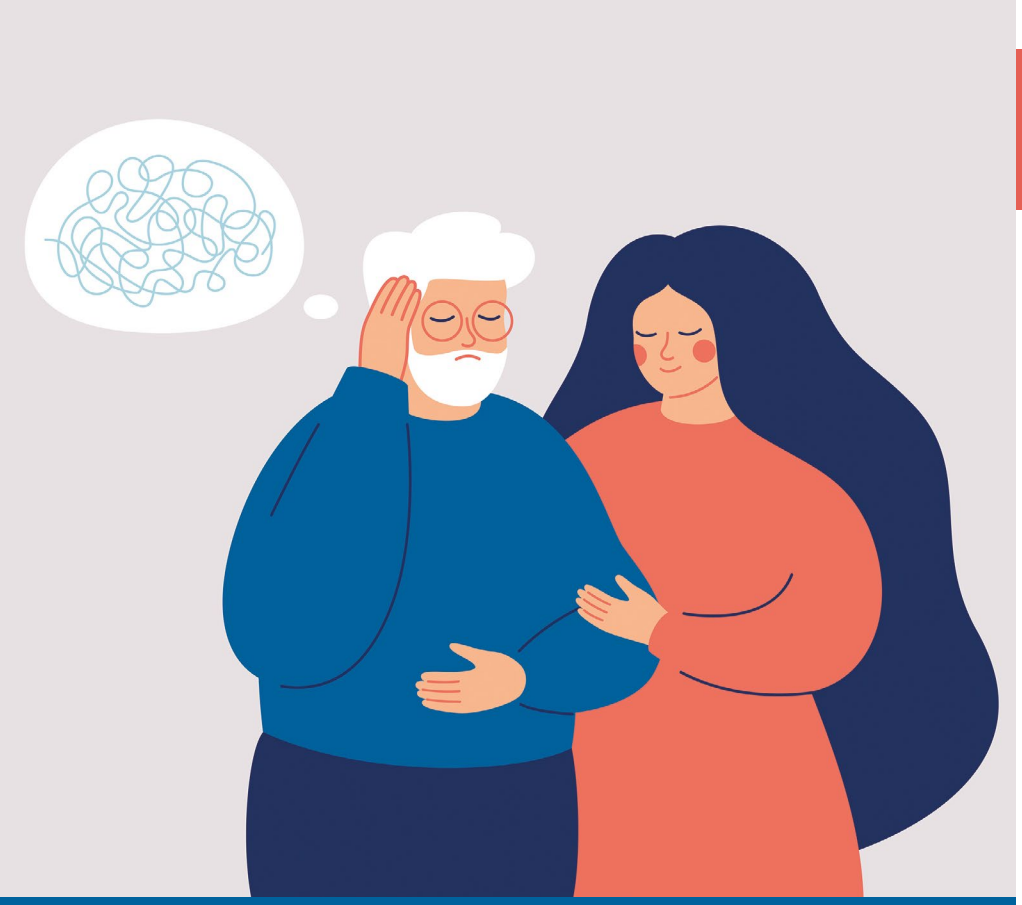

Dementia and oral health

Does oral health play a part in dementia risk? How common is it that there is an awareness of dementia and a link to oral health? Dental therapist **Laura Hinds** explores the links.

According to the World Health Organisation, 'Dementia is a syndrome in which there is deterioration in cognitive function beyond what might be expected from the usual consequences of biological ageing'.[1] Dementia is not thought to affect those in their younger years; 'although dementia mainly affects older people, it is not an inevitable consequence of ageing. Currently more than 55 million people live with dementia worldwide, and there are nearly 10 million new cases every year'.[1]

Dementia results from a variety of diseases and injuries that primarily or secondarily affect the brain. Alzheimer's disease is the most common form of dementia and may contribute to 60–70% of cases.[1]

There are studies to suggest that in the older population, dementia has an impact on oral health. As dementia is a cognitive degenerative condition, this is not surprising given that it will affect the way in which a person lives; they may become unable to do the most basic things – taking care of their teeth being one of them. The studies carried out 'suggest that older people with dementia had high scores for gingival bleeding, periodontitis, plaque, and assistance for oral care. In addition, candidiasis, stomatitis, and reduced salivary flow were frequently present in older people with dementia'.[2] As dental care professionals (DCPs), the main focus here would be oral hygiene instruction (OHI) – however, given that many families of those affected lead busy lives, it is more common for affected individuals to now be in care homes, as 'a person with dementia will need more care and support as their symptoms get worse

over time. This may mean that a move into a care home can better meet their needs'.[3] This leads to the question: is there enough being done in care homes to support the dental team – simple brushing twice daily to help reduce plaque scores and bacterial load – and to also make the patient feel more comfortable and have more of a quality of life? Is it these bacteria now affecting the mental state, or has it been due to previous dental neglect on the patient part?

A recent study has linked gum disease with dementia; the oral cavity houses multiple bacteria and 'is home to about 700 species of bacteria, including those that can cause periodontal (gum) disease. A recent analysis led by NIA [National Institute on Aging] scientists suggests that bacteria that cause gum disease are also associated with the development of Alzheimer's disease and related dementias, especially vascular dementia'.[4] Gum disease, or periodontal disease, 'affects the gums, bone and other supporting tissues of the teeth. It is caused by the bacteria which regularly collect on the teeth'.[5] Due to infection and inflammation of the surrounding tissues, 'bacteria and the inflammatory molecules they make can travel from infections in the mouth through the bloodstream to the brain. Previous lab studies have suggested that this is one mechanism influencing the cascade of events that leads to dementia, but large studies with people have not been conducted to confirm this relationship'.[4]

Despite this not being confirmed, there is a very strong likelihood that this is the case – bacteria travel through the blood – a study by Beydoun *et al.* 'provides evidence for an association between periodontal pathogens and AD (Alzheimer's Disease), which was stronger for older adults'.[6] However, 'Effectiveness of periodontal pathogen treatment on reducing sequelae of neurodegeneration should be tested'.[6] This is in addition to the fact that there are certain types of bacteria which are likely to be more predisposed, as 'co-infection between *Helicobacter pylori* (Hp) and groups of periodontal pathogens may alter the onset of Alzheimer's disease (AD) and all-cause dementia'.[7]

The studies examined present a strong case for the fact that there is a strong likelihood, although not confirmed entirely due to more randomised controlled trials being required. However, looking at the current evidence, it seems that from middle to older age, the more oral health is neglected, the more likely one is to potentially develop dementia or Alzheimer's disease, due to the bacteria – particularly in clinical attachment loss and deeper probing depths – circulating the bloodstream. This is then pumped around the body to allow oxygen to get to the required tissues.[8] So, in this process, bacteria are being transported also – however more studies are required to confirm this, as well as to assess how this works. It is known that this is the mode/process, however, how it actually takes place and whether it is down to luck, is yet to be confirmed.

A strong bacterium was *Porphyromonas gingivalis* (*P. gingivalis*)[6] which is also part of the aetiology of gingivitis periodontal disease.[9] It is then the host response to these bacteria which decides on the grouping of either category.[9] Could it be this too – the host response that determines the outcome of whether or not the host will experience dementia later on in life?

Overall, there is evidence to suggest that dementia can be predisposed from the oral cavity due to the bacteria. However, it could be suggested that the more one pays attention to their oral health in their younger years, to avoid and prevent periodontal disease and gingivitis as much as possible, the more this will help limit the bacterial load which is transported around the blood stream.

More evidence and testing are required to determine and confirm, but weighing everything up – it would seem there is a link.

Once a patient has dementia, it is then clear this will affect quality of life – with many older people having their oral health neglected as shown through oral conditions such as candidiasis, stomatitis, and high levels of plaque. Perhaps more will need to be done in the way of improving this and their quality of life, particularly in care homes.

In short, regular oral hygiene visits, and good oral health at home, could potentially limit the risks of developing dementia.

> ***'It could be suggested that the more one pays attention to their oral health in their younger years, the more this will help limit the bacterial load.'***

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