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DENTAL REFERRAL CENTRE



WHITE PAPER

Latest literature review By Ros O'Leary

DIET & PERIODONTAL DISEASE

WHAT TO ADVISE OUR PATIENTS?

How many times have patients sat in our chairs over the years and told us that they had read that taking Q10 or some other specific food group could help their gums?

Or what to say when a patient asks you how they can help their periodontal condition through diet /life style? The internet is full of advice about healthy diets <https://nano-b.com/blogs/news/the-30-best-food-for-healthy-teeth-and-gums>

I have always stayed on the vague side of... 'periodontal disease is a chronic inflammatory disease and like all chronic diseases, genetics play the main part, but a healthy diet /low inflammatory diet can only help the manifestation of periodontal disease'. There is some evidence that high carbohydrate and high fat intake could contribute to a proinflammatory and prooxidative state which is a key driver of the chronic inflammation pathway.

I struggle to think that most patients are vitamin deficient but lots of us now take Vitamin D supplements as Vit D deficiency has been found to be more common than previously thought but on the whole a balanced diet is likely to provide all the nutrients we need for health. As such I am loathe to recommend dietary supplements.

On the other hand there is much evidence re the link between periodontal disease and lots of other chronic diseases including CVD, Diabetes, and Metabolic syndrome, all of which have clearer guidelines about what constitutes a healthy diet and a non-healthy diet.

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"Browsing through the Journal of Clinical Periodontology recently (as you do!) I was struck by the fact that there were **FIVE** articles in one journal relating to nutrition and periodontal disease." Ros O'Leary

One article stated that a diet high in yoghurt was found to have a lower risk of tooth loss.

Ma et al J Clin

Periodontol.2022;49:345–352.

Could this really be true?

Yogurt product intake and reduction of tooth loss risk in a Japanese community.

Conclusion: These findings suggest that an intake of yogurt products is associated with a lower risk of tooth loss resulting from periodontal disease, probably via modulation of the oral microbiome composition.

In the same journal, J Clin Periodontol.2022;49:335–344 **Circulating vitamin C and D concentrations and risk of dental caries and periodontitis: A Mendelian randomization study.**

Hu et al concluded:

1.'No significant causal relationship was found between circulating vitamin C concentrations and the risk of caries, number of teeth remaining, and periodontitis.

2.Considering the minimal effect size between serum vitamin D levels and remaining teeth, vitamin D supplementation alone is unlikely to make clinically meaningful difference and effectively prevent or alleviate teeth loss.

This was followed by Ottoson et al, J Clin Periodontol.2022;49:353–361. **The inverse association between a fish consumption biomarker and gingival inflammation and periodontitis: A population-based study**

Conclusions: A person with a 1 SD higher level of CMPF (a fish consumption biomarker) is less likely to have severe periodontitis and gingival inflammation after adjusting for age, sex, education, fasting plasma glucose, and smoking habits. Practical implications: This study suggests that fish consumption is associated with less gingival inflammation and periodontal pockets.

Still in the same edition of the journal, Heo et al J Clin

Periodontol.2022;49:362–377

Supplemental or dietary intake of omega-3 fatty acids for the treatment of periodontitis: A meta-analysis

Conclusion: This study suggests that supplemental or dietary intake of omega-3 fatty acids for the treatment of periodontitis may have a positive impact on the disease.

Omega-3 fatty acids can be used as a supplement for periodontal treatment and maintenance.

And finally within the same journal, Eberhard et al J Clin Periodontol.2022;49:388–400 A randomized clinical trial to investigate the effect of dietary protein sources on periodontal health

Conclusions: The findings of this study showed that a semi-vegetarian high-fat diet has beneficial effects for the oral health of old-age people. (Experimental diet over 4 weeks!) (they looked at Omnivorous higher fat or higher carbohydrate; semi-vegetarian higher fat or higher carbohydrate diets).

So What are we to advise our patients when the studies produce such conflicting results?



Looking at review papers Chapple et al J Clin Periodontol 2017; 44 (Suppl. 18): S39–S51, concluded that micro and macro nutrients were linked to periodontal disease severity

'Are periodontal diseases related to diet? If so what are the most important dietary risk factors? There is evidence from association studies and controlled clinical depletion studies that periodontal diseases are influenced by diet. Micronutrient deficiencies have been shown to be inversely related to periodontal health. Several studies in different populations have shown an independent inverse association between dietary vitamin C intake and plasma vitamin C concentrations and periodontitis

prevalence at a population level, even after adjusting for confounding factors. Moreover, it has been shown that Vitamin C depletion can lead to profuse gingival bleeding. Whilst there is conflicting evidence relating to vitamin D intake and serum levels to periodontal health vitamin D supplementation combined with calcium has been shown to reduce tooth loss and improve periodontal health. At a macronutrient level, emerging evidence indicates that a carbohydrate rich diet increases the risk of inflammation and thus gingival bleeding whereas a switch to a Palaeolithic diet, results in a decrease in gingival bleeding '

We as a profession were encouraged to **'Engage in discussions on weight loss from the perspective of oral diseases like periodontitis' AND to 'Increase awareness of importance of vitamin D and antioxidant micronutrients through natural dietary sources, especially in the elderly'**. Despite this, the paper also states 'At the present time, the impact of dietary risk factors upon periodontal diseases across the course of life remains unclear'



I also found a review paper in a 'non-periodontal' journal from last year. Martinon, P et al. Nutrition as a Key Modifiable Factor for Periodontitis and Main Chronic Diseases. J. Clin. Med. 2021, 10, 197.



Abstract: Nutrition is recognized as an essential component in the prevention of a number of chronic diseases, including periodontal disease. Based on these considerations, a better understanding is required regarding how the diet, and more particularly the intake of macronutrients and micronutrients, could impact the potential relationship between nutrition and periodontal diseases, periodontal diseases and chronic diseases, nutrition and chronic diseases. ...

High-sugar, high-saturated fat, low-polyols, low-fibre and low-polyunsaturated-fat intake causes an increased risk of periodontal diseases. This pattern of nutrients is classically found in the **Western diet**, which is considered as an 'unhealthy' diet that causes cardiovascular diseases, diabetes and cancers. Conversely, low-sugar, high-fibre and low-omega-6-to-omega-3 fatty acid ratio intake reduces the risk of periodontal diseases. **The Mediterranean, DASH, Vegetarian and Okinawa diets** that correspond to these nutritional intakes are considered as 'healthy' diets, reducing this risk of cardiovascular diseases, diabetes and cancers.

The role of micronutrients, such as vitamin D, E, K and magnesium, remains unclear, while others, such as vitamin A, B, C, calcium, zinc and polyphenols have been shown to prevent Periodontal Diseases. Some evidence suggests that probiotics and prebiotics could promote periodontal health. Periodontal and chronic diseases share, with a time delay, nutrition as a risk factor. Thus, any change in periodontal health should be considered as a warning signal to control the dietary quality of patients and thus reduce the risk of developing chronic diseases later on.

So what do the new S3 guidelines say about diet and diet advice in relation to PERIODONTAL TREATMENT.



Treatment of stage I-III periodontitis—The EFP S3 level clinical practice guidelines. Sanz et al J Clin Periodontol. 2020;47:4–60. Evidence-based recommendation

1.7 - We recommend diabetes control interventions in patients undergoing periodontitis therapy.

1.9 - We do not know whether dietary counselling may have a positive impact in periodontitis therapy.

1.8 - We do not know whether interventions aimed to increasing the physical exercise (activity) have a positive impact in periodontitis therapy.

1.10 - We do not know whether interventions aimed to weight loss through lifestyle modification may have a positive impact in periodontitis therapy.

2.7 - We suggest not to use probiotics as an adjunct to subgingival instrumentation

4.11 2 - We do not know whether other adjunctive agents (such as probiotics, prebiotics, anti-inflammatory agents, antioxidant micronutrients) are effective in controlling gingival inflammation in patients in supportive periodontal care.

'Smoking and diabetes are two of the main risk factors for periodontitis, and they are currently included in the grading of periodontitis. Controlling these risk factors therefore would be critical for treatment response and for long-term stability. In addition, other relevant factors, part a healthy life-style counselling, are considered, including dietary counselling, physical exercise or weight loss. These interventions, together with those for tobacco cessation and diabetes control, are not direct responsibility of oral health professionals, and they may want to refer the patients to other health professionals. **However, the direct/indirect role of oral health professionals in these interventions should be emphasized**'.

So having reviewed all the literature, have I changed my approach?



Well I still don't see any long-term evidence that specific dietary advice will help moderate my patients periodontal disease. But clearly there is evidence that a healthy lifestyle improves peoples general and oral health as well as immune function which is critical to the management of periodontal disease as it is for all known chronic inflammatory diseases. There is also some evidence about specific nutritional factors and their influence on disease progression. Overall it is a difficult field to study; the methods to document diet usually rely on self-reporting questionnaires, and it is difficult to quantify the effect of any one factor on such a multifactorial disease. Don't forget also - many studies are carried out under university settings which is completely different to general practice!

So perhaps I will change my emphasis slightly. I will still talk about oral hygiene until the cows come home(!) as well as smoking and diabetes but I will also try to frame this around the concept of health - weight loss, low carbohydrate diet, low inflammatory diet, exercise as well as reduced stress more than I have done in the past. Time will tell how effective that will be but I don't think we are yet at the point of asking our patients to eat more yoghurt despite the findings of Ma et al J Clin Periodontol.2022;49:345-352!

I would be interested in any feedback you may have on this topic of nutrition and periodontal disease.

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