Vitamin D, oral health and pregnancy

Dear bpac,

In your recent article "Common issues in paediatric oral health" (BPJ 27, April 2010), I was surprised that the importance of vitamin D in dental and gingival health was not mentioned.

I think doctors should be aware that vitamin D does not only affect bone health, but oral health too. It appears to be important in the brain of the developing foetus and may have a preventative effect against child autism and type 1 diabetes.

–Dr Richard Coleman, GP
Auckland

Oral health

The question of vitamin D and oral health is an interesting one. Historical research in the 1920s and 1930s suggested that sufficient nutritional intake of vitamin D was a factor in resistance to dental caries. However other research contradicted this finding and it was accepted that additional dietary factors (sugars, fermentable carbohydrates and fluoride) had a much greater impact on dental caries.

More recently (1989), researchers investigated the effect of ultraviolet light on the incidence of dental caries in Alberta, Canada. They found reduced incidence of caries in children exposed to full spectrum lighting in classrooms at school.[1] The hypothesised mechanism behind this is that salivary flow is increased in light compared to darkness, and therefore the increased classroom lighting increased the production of saliva, which is protective against dental caries. This study has not been replicated and remains to be corroborated by further research. However it is of interest in these days where sun exposure may be limited due to avoidance and sunscreen usage.

With respect to gingival health, several observational studies have found an association between low plasma concentrations of vitamin D and increased markers of periodontal disease such as gingival inflammation, bleeding and gum pocket depth.[2, 3] A recent cross sectional study indicated a trend towards better periodontal health in people taking vitamin D with calcium supplements.[4] Further studies are required to clarify the relationship between vitamin D status and oral health but it is reasonable to assume that low vitamin D status is associated with increased risk and severity of periodontal disease.

Good nutritional intake is necessary for general oral health. However, there is currently no evidence that supplementation of vitamin D, over and above normal dietary intake and exposure to sunlight, provides additional benefits in terms of oral health.

Pregnancy

It is well accepted that vitamin D is important for maternal and foetal health during pregnancy. Low levels of vitamin D may adversely affect foetal bone growth and accumulation of newborn vitamin D stores. Rickets is a clinical marker of poor pre- and post-natal bone health caused by vitamin D deficiency.

Current research and epidemiological studies are now looking into the possible association between low levels of maternal vitamin D at birth and later development of autoimmune disorders such as multiple sclerosis and diabetes. It has also been suggested that low vitamin D levels during pregnancy are a possible risk factor for autism. This hypothesis is based on the fact that vitamin D inhibits excessive cell proliferation in a number of tissues, including the brain and therefore an absence or deficiency of vitamin D would result in neuronal overgrowth, a suggested key feature of autism.[5] Further research is required to provide conclusive evidence for or against these hypotheses.

Although it remains to be seen if vitamin D deficiency will be implicated as a cause of illnesses such as type

1 diabetes and autism, maintaining adequate vitamin D levels during pregnancy, and in newborns, is important. The current recommendation of 200 IU of vitamin D per day during pregnancy is viewed by most experts as a gross underestimation of actual need. What this level of supplementation should be is still unclear but a large, multi-year, double-blinded, placebo controlled trial of supplementation up to 4000 IU per day is currently underway.

For more information about the vitamin D trial visit: **http://clinicaltrials.gov** (**Trial # R01HD 043921**)

References:

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We value your feedback. Write to us at: Correspondence, PO Box 6032, Dunedin or email: editor@bpac.org.nz