



EBD spotlight: Does dental caries increase the risk of undernutrition in children?

Author information

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Manas Dave¹ reflects on topics discussed

in our sister journal *Evidence-Based Dentistry*.

Does dental caries increase risk of undernutrition in children? was published in *JDR Clinical & Translational Research*.¹ A commentary on the paper was published in *Evidence-Based Dentistry*.²

Research has shown malnutrition in children to decrease salivary flow,³ delay exfoliation of primary teeth, delay eruption of permanent teeth⁴ and cause developmental tooth defects. The combination of these risk factors has linked malnutrition with an increased risk of dental caries.⁵ The aim of this systematic review was to determine the link between severity of dental caries and malnutrition (through assessing wasting or stunting in children).^{1,2}

Methods

An electronic database search of Medline and Embase was conducted in March 2018 with an update in July 2019. Hand searches of citation lists were undertaken, and experts consulted to identify further studies. No date or language restrictions were used. Participants were children aged 0–18 years in low–middle or high income countries. The exposure variable was dental caries, and the outcome variable was undernutrition (including stunting which is low height for age and wasting which is low weight for height). Quality assessment was undertaken using a previously published assessment tool.⁶

Results

- Permanent dentition – severity of dental caries with wasting and stunting: 17 studies reported an association of severity of dental caries in the permanent dentition and risk of wasting. Six studies showed a positive association, three studies a negative association and eight studies no association. Two studies reported an association of severity of dental caries in the permanent dentition and stunting, with one study showing a positive

association and one study showing a negative association

- Primary dentition – severity of dental caries with wasting and stunting: 15 studies reported an association of severity of dental caries in the primary dentition and risk of wasting. Twelve studies showed a positive association, one study a negative association and two studies showed no association. Six studies reported an association of severity of dental caries in the primary dentition and stunting, with all six showing a positive association
- Early childhood caries and wasting: six studies reported prevalence of early childhood caries (ECC) and risk of wasting. Four studies showed a positive association, and two studies showed a negative association. Seven studies reported severity of ECC and wasting with six studies reporting a positive association and one study a negative association

majority of publications reporting a positive association between prevalence and severity of dental caries with wasting or stunting in children. However, there is a need for well-designed prospective studies to contribute to the evidence. Dental professionals can make dietary recommendations to their patients by following the *Delivering better oral health* guidelines (Chapter 10: healthier eating).⁷

References

1. Tanner L, Craig D, Holmes R, Catinella L, Moynihan P. Does dental caries increase risk of undernutrition in children? *JDR Clin Trans Res* 2022; **7**: 104–117.
2. Large J, Marshman Z. Does dental caries lead to stunting and wasting in children? *Evid Based Dent* 2022; **23**: 144–145.
3. Psoter W J, Spielman A L, Gebrian B, St Jean R, Katz R V. Effect of childhood malnutrition on salivary flow and pH. *Arch Oral Biol* 2008; **53**: 231–237.

‘The majority of publications reporting a positive association between prevalence and severity of dental caries with wasting or stunting in children.’

- Early childhood caries and stunting: two studies had data relating to prevalence of ECC and stunting with one study showing a positive association and one study no association. Two studies had data relating to severity of ECC and stunting with both showing a positive association
- Severe early childhood caries with wasting and stunting: two studies had data on the prevalence of severe ECC and risk of wasting with one study showing a positive association and one study a negative association. No studies had any data on prevalence of severe ECC and stunting.

Conclusions

The authors concluded: ‘...an association between severity of caries in the primary dentition and risk of undernutrition.’

Comments

This well-conducted systematic review mitigated against overall low quality publications through the quality assessment tool which removed 60% of publications from data analysis. The harvest plots showed the

4. Reis C L B, Barbosa M C F, Henklein S *et al*. Nutritional status is associated with permanent tooth eruption in a group of Brazilian school children. *Glob Pediatr Health* 2021; doi: 10.1177/2333794X211034088.
5. Sheetal A, Hiremath V K, Patil A G, Sajjansetty S, Kumar S R. Malnutrition and its oral outcome – a review. *J Clin Diagn Res* 2013; **7**: 178–180.
6. Hooley M, Skouteris H, Boganin C, Satur J, Kilpatrick N. Body mass index and dental caries in children and adolescents: a systematic review of literature published 2004 to 2011. *Syst Rev* 2012; doi: 10.1186/2046-4053-1-57.
7. Public Health England. Chapter 10: Healthier eating. *In: Delivering better oral health: an evidence-based toolkit for prevention*. 9 November 2021. Available at: <https://www.gov.uk/government/publications/delivering-better-oral-health-an-evidence-based-toolkit-for-prevention/chapter-10-healthier-eating> (accessed February 2023).

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