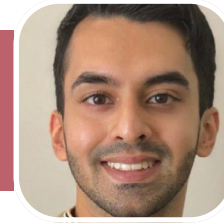


## EBD spotlight: Sealants for preventing dental caries in primary molars



**Manas Dave<sup>1</sup>** reflects on topics discussed

in our sister journal *Evidence-Based Dentistry*.

**A**re sealants effective in preventing caries in primary molars? was published in *Evidence-Based Dentistry* on 24 June 2022,<sup>1</sup> a commentary on *Sealants for preventing dental caries in primary teeth*.<sup>2</sup>

Dental caries is a multifactorial disease caused by the actions of cariogenic bacteria. These bacteria metabolise fermentable carbohydrates (sugars), releasing acid as a by-product which lowers the pH of the biofilm resulting in demineralisation. Untreated dental caries can result in pain, difficulty chewing, tooth loss and loss of function amongst a range of other health conditions. The mechanism of dental caries progression is well summarised by Coulthard and Thomson.<sup>3</sup> In England, extraction of teeth affected by dental caries is the most common reason for the hospital admission of children.<sup>4</sup> A national survey of three-year-old children reported 10.7% of children having experienced dental caries; of those affected, each had on average three teeth with dental caries.<sup>5</sup> In primary molars, 44% of all dental caries is seen in the pits and fissures.<sup>2</sup> A Cochrane systematic review concluded that resin-based sealants applied to the occlusal surfaces of permanent molars are effective in the prevention of dental caries.<sup>6</sup> Therefore, the aim of this Cochrane systematic review<sup>2</sup> was to determine if the same level of sealant effectiveness is seen in primary molars.

### Methods

An electronic database search of Medline, Embase, Cochrane Oral Health Trial's Register and Cochrane CENTRAL was conducted up to 11 February 2021 with no date or language restrictions. Additionally, the US National Institutes of Health Ongoing Trials Register and World Health Organisation International Clinical Trials Registry Platform were searched. Only randomised control trials (RCTs) of parallel-group and split-mouth

study designs that investigated the prevention of caries in primary molars were included. Studies were excluded if they included complex preventative interventions such as preventative resin restorations, sealants used in cavitated lesions or studies that compared sealants with restorations.

caries in the glass ionomer-based sealant group and 5.9% developed dental caries in the resin-based sealant group. Another RCT reported there was no difference between either material

Comparison 4: Fluoride releasing resin-based sealant vs resin-based sealant. One RCT reported no new carious lesions in either

for the prevention of dental caries and this practice should be continued.<sup>1</sup>

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*for the prevention of dental caries...’*

## Results

Nine studies were included in this systematic review (one parallel group RCT and eight split mouth RCTs) involving 1,120 children and 1,977 tooth surfaces.

Studies were conducted in Brazil, China, Denmark, France, Spain, Turkey and the UK

The Cochrane Risk of Bias Tool assessed all studies at overall high risk of bias. There was high risk of bias for most studies for performance and detection bias (specifically regarding blinding)

Sealants were applied to sound occlusal surfaces or occlusal surfaces with enamel lesions on primary first or second molars

Comparison 1: Fluoride-releasing resin-based sealant vs no sealant. In the 88 children examined at 12 months, 6/137 treated surfaces had developed dental caries compared to 5/137 untreated surfaces (BB OR 1.21, 95% CI 0.37–3.94). At 24 months (of 85 children), 21/128 treated surfaces developed dental caries compared to 26/127 untreated surfaces (BB OR 0.76, 95%CI 0.41–1.42)

Comparison 2: Glass-ionomer based sealant vs no sealant. One RCT included 508 children with a follow-up between 12–30 months and reported dental caries in 23.5% of the sealant group compared with 24.1% in the no-sealant group. Another RCT including 111 children reported a 1.1% dental caries rate with glass-ionomer based sealant compared with 26.4% with no sealant. The odds of developing a carious lesion were lower for the sealant group than the no-sealant group at six months (OR 0.031, 95% CI 0.002–0.601) and 12 months (OR 0.033, 95% CI 0.007–0.149)

Comparison 3: Glass ionomer-based sealant vs resin-based sealant. One RCT reported 1.6% of surfaces developed dental

of the sealant groups at 6- and 12 months.

Another RCT reported two surfaces with resin-based sealant had developed dental caries compared with no surfaces in the fluoride releasing resin-based sealant at 12 months

Comparison 5: Flowable composite vs fluoride-releasing resin-based sealant. One RCT reported no development of any carious lesions in either group

Comparison 6: Autopolymerised sealant vs light polymerised sealant. One RCT randomised 52 tooth pairs in 52 children and reported dental caries in 5.9% of teeth sealed with autopolymerising sealant compared with 9.8% of teeth with light polymerising sealant (OR 0.58, 95% CI 0.15–2–19).

## Conclusions

The authors concluded:

‘The certainty of the evidence for the comparisons and outcomes in this review was low or very low, reflecting the fragility and uncertainty of the evidence base. [...] Given the importance of prevention for maintaining good oral health, there exists an important evidence gap pertaining to the caries’ preventive effect and retention of sealants in the primary dentition, which should be addressed through robust RCTs.’<sup>2</sup>

## Comments

The RCTs included in this systematic review were of high risk of bias and heterogeneous, resulting in limited conclusions that could be drawn. However, most studies did suggest a direction of sealants being favourable (compared to no sealants). Clinical guidelines currently recommend the use of fissure sealants in both primary and permanent teeth

## Author information

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