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Dental caries: Do tooth sealants help in children and young people?



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The chewing surface of molars (back teeth) that have deep dents or grooves in them are particularly prone to tooth decay. This is because bacteria can easily get stuck inside the dents and grooves (fissures). Tooth decay, also called dental caries or cavities, is especially common in children and teenagers. One reason for this is because the protective enamel layer on their molars has not yet developed properly so these teeth are more vulnerable. If they eat too much sugary food and do not brush their teeth enough, their risk of tooth decay is higher.

To try to prevent tooth decay, dentists sometimes suggest using tooth sealants, particularly on permanent molars. In this painless procedure, the dentist covers the grooves on the surface of the teeth with a sealant, which is usually a resin (plastic) liquid. The aim is to stop bacteria from building up there. Various resin-based materials are used as sealants. Some of these release fluoride, whereas others do not. You can read more about what the procedure involves in our fact sheet (URL: <http://www.informedhealthonline.org/index.191.en.html>).

Research on tooth sealants

Researchers from the Cochrane Collaboration wanted to find out how effective tooth sealants are. To do this, they systematically reviewed the results of trials. The researchers found 16 trials that tested modern forms of tooth sealants. The trials included children who were between about 5 and 16 years old. Some of the trials compared teeth that had sealants on them with teeth that did not – for example, by applying tooth sealants to the molars on one side of the children's mouths, but not the other. Ten of the trials compared different types of sealants with each other.

These trials showed that tooth sealants can work. After 4 to 5 years, compared to the “non-sealed” side, about half as many teeth on the “sealed” side of the children's mouths had cavities. One trial followed the children up for 9 years. In this trial, one group of children had tooth sealants applied to their teeth, and the other group did not. After 9 years, only 27% of the sealed teeth were affected by tooth decay, compared to 77% of the non-sealed teeth.

One of the keys to getting the most protection against tooth decay is that the sealants need to last as long as possible. After 1 year, 80 to 90% of the sealants were still in place. After 4 to 5 years, about 50 to 70% were still in place.

Resin-based sealants lasted longer than so-called glass ionomer cement. In other words, sealants made from glass ionomer cement had to be re-applied more often.

It is not clear whether a particular material offers better protection against tooth decay than other materials if it stays intact. The trials did not look at adverse effects. The resins that are used nowadays are generally thought to be safe. Some people have had allergic reactions to them, but that is rare. It can be a good idea to have tooth sealants checked regularly by a dentist, to see whether the protective layer has worn away.

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Glossary

bacteria

Bacteria are micro-organisms that, unlike viruses, can exist on their own. Viruses, on the other hand, can only exist inside a living cell. Most bacteria are not harmful to people, and some are actually beneficial. Bowel bacteria support bowel health. However if they get into the urinary system, they can cause an infection there. Doctors prescribe antibiotics for illnesses where bacteria need to be stopped or killed off. Immunisation is also possible against some bacterial infections, such as diphtheria, tetanus or whooping cough.

Cochrane Collaboration

The Cochrane Collaboration is an international network of thousands of researchers and others. They work together in teams called Cochrane Review Groups to answer questions about health care by doing systematic reviews of evidence. To achieve this, the members of the Collaboration have developed systems and methods for systematically finding and analysing the results of trials of health care interventions. The goal of the Cochrane Collaboration is to help patients, health care practitioners and others make more informed decisions about health care. You can read more about the Cochrane Collaboration at their website.

fluoride

Fluoride is a naturally occurring substance. It is used in toothpaste and table salt as a preventive measure against tooth decay (caries or cavities). If children get too much fluoride, it can affect the development of the tooth enamel, causing white patches on the teeth. This is toothpastes made for children have less fluoride than toothpastes for adults.

Sources

IQWiG health information is based on research in the international literature. We identify the most scientifically reliable knowledge currently available, particularly so-called “systematic reviews”. These summarize and analyze the results of scientific research on the benefits and harms of treatments and other health care interventions. This helps medical professionals and people who are affected by the medical condition to weigh up the pros and cons. You can read more about systematic reviews and why these can provide the most trustworthy evidence about the state of knowledge here (URL: <http://www.gesundheitsinformation.de/evidence-based-medicine.61.en.html>) . The authors of the major systematic reviews on which our information is based are always approached to help us ensure the medical and scientific accuracy of our products.

Ahovuo-Saloranta A, Hiiri A, Nordblad A, Mäkelä M, Worthington HV. Pit and fissure sealants for preventing dental decay in the permanent teeth of children and adolescents. *Cochrane Database of Systematic Reviews* 2008, Issue 4. [PubMed summary (URL: <http://www.informedhealthonline.org/> <http://www.ncbi.nlm.nih.gov/pubmed/18843625>)]

The German Institute for Quality and Efficiency in Health Care (IQWiG)

The German Institute for Quality and Efficiency in Health Care (IQWiG) was established by legislation to provide evaluations of the effectiveness, quality and efficiency of healthcare services. This includes the assessment of medicines as well as the publication of health information for consumers and patients.

Evidence basis of our health information

Our information is based primarily on systematic reviews of the effects of health care. Systematic reviews are necessary to gain an objective picture of health care. In order to do this, a clear question is formulated. Researchers then find all the relevant studies that could answer this question. They then evaluate those studies.

You can find a list of the evidence and other scientific literature on which this information is based at **www.informedhealthonline.org**

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