



Pit and Fissure Sealants

Case Study

Case Study: Caries Prevention Using Pit and Fissure Sealants in Greek Adolescents

A systematic review of pit and fissure sealants, published in the Journal of the American Dental Association in 2008, concluded that sealants are effective in preventing caries initiation and progression.¹ Specifically the panel concluded: 1) Placement of resin-based sealants on the permanent molars of children and adolescents is effective for caries reduction; 2) Reduction of caries incidence in children and adolescents after placement of resin-based sealants ranges from 86 percent at one year to 78.6 percent at two years and 58.6 percent at four years ; 3) Sealants are effective in reducing occlusal caries incidence in permanent first molars of children, with caries reductions of 76.3 percent at four years, when sealants were reapplied as needed. Caries reduction was 65 percent at nine years from initial treatment, with no reapplication during the last five years; 4) Pit-and-fissure sealants are retained on primary molars at a rate of 74.0 to 96.3 percent at one year; and 5) When placed over existing caries, sealants lower the number of viable bacteria by at least 100-fold and reduce the number of lesions with any viable bacteria by 50 percent.² Similarly, A Cochrane Review published in 2009 concluded that: “Sealing is a recommended procedure to prevent caries of the occlusal surfaces of permanent molars. The effectiveness of sealants is obvious at high caries risk but information on the benefits of sealing specific to different caries risks is lacking.”³

A study among a sample of 2,481 Greek adolescents, selected according to WHO guidelines, and living in urban and rural areas also demonstrated a caries protective



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effect of sealants.⁴ Subjects including children from different socioeconomic backgrounds from 14 urban and 8 rural sites were randomly selected from two large cities, six counties, two islands in the Aegean Sea and one island in the Ionian Sea.

Data was collected via clinical exams by five calibrated examiners and questionnaires completed by the adolescents regarding caries experience, sealant's presence (regardless if it was total or partial), periodontal status, oral hygiene level, sociodemographic indicators such as location (urban-rural), gender, parent's education level, type and mode of preventive measures and reason for visiting a dentist. The results demonstrated that the prevalence of sealant use was not consistent within the different districts, with 8.3% of the 12 and 8.0% of the 15-year-old adolescents having at least one sealed molar. Those with sealants had lower DMFS scores; 11% lower in the 12-year-olds and 24% lower in the 15-year-olds. Adolescents from rural areas had fewer sealants than those in urban areas, $p=0.002$. Girls had a higher prevalence of sealants in both age groups (26% for the 12 and 19% for the 15-year-old). Based on the caries reduction effects of sealants, as well as their low utilization, the authors called for a national prevention program with sealants which they believe could greatly reduce caries prevalence in Greek children and adolescents.

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References:

1. Beauchamp J, Caufield PW, Crall JJ, Donly K, Feigal R, Gooch B, et al. Evidence-based clinical recommendations for the use of pit-and-fissure sealants: A report of the American Dental Association Council on Scientific Affairs. *JADA* 2008;139(3):257-268.
2. Oong EM, Griffin SO, Kohn WG, Gooch BF, DMD, and Caufield, PW. The effect of dental sealants on bacteria levels in caries lesions - A review of the evidence. *JADA*, Vol. 139; March, 2008; 271-278.
3. 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 (Review). in *The Cochrane Library*, 2009, Issue 2.
4. Oulis CJ, Berdouses ED, Mamai-Homata E, Polychronopoulou A. Prevalence of sealants in relation to dental caries on the permanent molars of 12 and 15-year-old Greek adolescents. A national pathfinder survey. *BMC Public Health* 2011, 11:100.