



Fluoride Toothpaste

Case Study

Case Study: Caries Reduction with Supervised Use of Fluoride Toothpaste in Scotland

Wide disparities in the prevalence of caries exist among Scottish children, particularly among those from low socio-economic backgrounds.¹ Furthermore, regular toothbrushing was reported by only one-third of children who developed caries in their first permanent molars.² Hence, researchers sought to determine the reduction in caries after two years due to an in-school daily supervised toothbrushing program using fluoridated toothpaste compared to a control group.²

Twelve schools were selected from a socio-economically deprived area (Tayside, Scotland) known to have a high prevalence of caries. Researchers utilized a single blinded randomized controlled trial design where subjects were randomized to intervention/control group based on a school and class basis. Two classes from within each school were selected, one as an intervention class and another as the control class. Participants were within their first year of primary school with a mean age of 5.3 years. In sum, 461 children completed the trial. Parents/Guardians were notified of their child's class randomization assignment upon recruitment.

Children in the intervention group participated in a school based supervised tooth brushing program with fluoridated toothpaste (1,000 ppm). Toothbrushes and toothpaste were provided for in-school and home use. Children were supervised by local mothers



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who were trained in proper brushing techniques (with follow-up training during year two), infection control and data collection.

All children were examined biannually by a single calibrated examiner who was blinded to the intervention status of the children. Examinations were conducted using the D1-D3 scale (which includes cavitated and non-cavitated lesions). Furthermore, a questionnaire was requested from parents yearly.

At baseline, all children exhibited high indices of caries regardless of group assignment (d_{1mfs} : intervention=9.87 vs. control=9.88; d_{3mfs} : intervention=8.63 vs. control=8.75). There were no significant differences between the groups in incidence of caries in the posterior primary dentition. However, at the two-year follow-up, children in the intervention group exhibited fewer caries in the first permanent molars (D_1FS : intervention=1.10 vs. 0.67; D_3FS , p -value=0.04: intervention=0.46 vs. 0.19, p -value=0.02).

This study highlights the role of supervised use of fluoridated toothpaste in reducing incidence of caries in the first permanent molars. Furthermore, because parents were aware of their child's group assignment, results may have been underestimated due to crossover. Hence, introduction of supervised fluoridated toothpaste use into high-risk populations may have beneficial effects on caries reduction.

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References:

1. Preventing Dental Caries in Children at High Caries Risk: Scottish Intercollegiate Guidelines Network; 2000.
2. Curnow MM, Pine CM, Burnside G, Nicholson JA, Chesters RK, Huntington E. A randomised controlled trial of the efficacy of supervised toothbrushing in high-caries-risk children. *Caries Res.* Jul-Aug 2002;36(4):294-300.