

Xylitol candies in caries prevention: results of a field study in Estonian children

Pentti Alanen, Pauli Isokangas and
Kristjan Gutmann
Institute of Dentistry, University of Turku,
Finland

Alanen P, Isokangas P, Gutmann K: Xylitol candies in caries prevention: results of a field study in Estonian children. *Community Dent Oral Epidemiol* 2000; 28: 218-24. © Munksgaard, 2000

Abstract – All field studies have unequivocally reported significant reductions in dental caries occurrence associated with the use of chewing gum containing xylitol. No other xylitol products besides chewing gum have so far been tested in field trials. A 5-year follow-up study with 2- or 3-year xylitol consumption periods began in Estonia in 1994 with 740 10-year-old children in 12 schools at baseline examinations. For the study, 3 clusters each including 3-5 schools were formed on the basis of baseline caries experience. The products were used under the supervision of the teachers 3 times per day during school days but not during weekends or during the 3-month summer holiday. The daily dose of xylitol was 5 g in all groups. The children were examined every year in September by two experienced clinicians. Dental caries was recorded according to WHO criteria. After 3 years, all xylitol groups showed a highly significant 35%–60% reduction in caries incident, compared with the corresponding control groups. The differences between candies, between candies and chewing gum, and between 2- and 3-year users in the xylitol groups were non-systematic, indicating no trends between the groups. The results suggest that not only xylitol chewing gum but also xylitol candies are effective in caries prevention, and that a school-based delivery system seems to offer a practical way to distribute and control the use of the xylitol products.

Key words: caries increments; chewing gum; delivery; xylitol candies

Pentti Alanen, Institute of Dentistry,
University of Turku, Lemminkäisenkatu 2,
20520 Turku, Finland. Tel: +358 2 333 8383,
Fax: +358 2 333 8356. e-mail:
pentti.alanen@utu.fi

Submitted 23 November 1998; accepted 13
October 1999

Several field studies have reported that caries occurrence figures have significantly decreased in association with the daily use of xylitol-containing chewing gum (1-6). No contradictory results have been reported. Chewing gum has been understood to be an ideal vehicle for transporting xylitol into the mouth because it is assumed that in this way xylitol can stay in the mouth long enough for the beneficial effects. In addition, the chewing effect itself increases saliva stimulation and improves the buffering capacity of the saliva. In fact, although it is very difficult to separate the effects of xylitol itself from the effects of the saliva stimulation, a considerable part of the caries preventive effect of the xylitol chewing gum has been attributed to the chewing effect (7). Chewing gum, however, also has some unfavorable properties, such as problems with waste, the fact that chewing gum is an unac-

ceptable habit in some societies, and difficulty in chewing due to poor dentition. To eliminate these obstacles, it is therefore also of interest to find other ways of using xylitol to prevent dental decay. No studies assessing the caries-preventive effect of xylitol candies have been published so far.

The use of xylitol chewing gum is today recommended in Finland and many other countries as a "smart habit", on an individual level. Studies analyzing the use of xylitol from a community perspective are lacking at present. From an economic point of view, xylitol may offer interesting possibilities in caries prevention for public health care because no professionals, no long-term education of personnel, and no specific facilities or chair-side time are needed for the prevention system based on the delivery of xylitol products. On the other hand, because of the relatively high price of xylitol,