

High caries levels: problems still to be tackled

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Bjarnason S. High caries levels: problems still to be tackled. *Acta Odontol Scand* 1998;56:176–178. Oslo. ISSN 0001-6357.

According to the World Health Organization more than 60% of European countries have achieved the goal of no more than 3 DMFT at the age of 12 years. The others, including the newly independent Baltic states, still have high caries levels. Data from recent studies show that mean caries prevalence among 12-year-olds in Latvia, Lithuania, and Estonia was 5.8, 4.9, and 4.6, respectively. Absence of caries was recorded in 5% of Latvian and Estonian and 12% of Lithuanian 12-year-olds. Fifteen-year-old Latvians and Lithuanians averaged 8.1 and 7.0 DMFT, which, owing to the absence of radiographic examination, may be a substantial underestimation of real caries levels. The possible adverse effects of the privatization of dental care and the benefits of increased access to fluoride dentifrice in these countries have not yet been evaluated. The extremely poor oral hygiene seen in epidemiologic surveys indicates that fluoride dentifrices may not be widely used. The caries levels in the Baltic states resemble those commonly encountered a couple of decades ago in the Nordic countries. Data from two follow-up studies in Iceland show 66% and 52% decline in caries prevalence for 12- and 15-year-old children, respectively, over a period of 7 years. However, the caries experience of the 15-year-olds in the latter study was similar to that of 12-year-olds 10 years earlier, both in mean caries score (DMFS 11.3 and 12.1) and frequency distribution. Nor has the proportion of occlusal and approximal DF values changed in spite of frequent use of fissure sealants. While caries has become mainly a pit and fissure phenomenon in 12-year-olds, 44.3% of Swedish 19-year-olds reportedly have approximal lesions, and, when enamel lesions are recorded, approximal caries dominates the DFS scores. Analyses of trends in Nordic countries show that, despite a substantial decline in caries prevalence, vigilance is required to prevent a delayed caries development in the future adult population. □ *Caries prevention; Estonia; Latvia; Lithuania*

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There has been a dramatic decline in the prevalence of dental caries in the Nordic countries in the past two decades. Iceland was the last of these countries to show this decline (1, 2). There is some evidence that the decline in caries prevalence among preschool children was even slower in Iceland and has not yet reached the target of 50% caries-free children at the age of 5 years, as proposed by the World Health Organization (WHO) (3). Derived in part from the European Organization for Caries Research (ORCA) symposium of 1996, Table 1 illustrates the prevalence of caries in a number of European countries and shows the considerable variation in caries levels still existing between countries (2, 4). Along with populations with low average caries prevalence, there are countries where tooth decay still poses a considerable health challenge. This article will concentrate largely on the problems of dental caries in the Baltic states.

Caries prevalence

Virtually all of the European populations with persisting high mean caries levels are to be found among previous Eastern bloc countries, which constitute the largest part of Europe both territorially and in terms of number of people. Two of the closest neighbors of the Nordic

countries, Latvia and Lithuania, are in this category; the former currently has the highest caries prevalence in Europe (5). These previously forgotten territories are larger than a number of Western European countries, with a population nearly totaling that of Sweden.

Table 2 shows caries levels in the three Baltic countries and the Nordic countries. Even though the lowest figures of caries prevalence from recent epidemiologic studies in the Baltic countries have been chosen, it is obvious that their caries levels considerably exceed those in the rest of Northern Europe (Nordic mean DMFT, 1.7) and are well above the European average DMFT of 2.4 calculated from WHO data for 28 countries, including Eastern and Central European countries (WHO, personal communication). Moreover, the Baltic caries levels, especially in Latvia and Estonia, are well above the WHO goals set for 2000, which have already been met and surpassed by a number of countries.

In contrast to the uneven distribution of caries in most Western countries, in the Baltic states caries is not concentrated in a minor population group but rather still affects virtually everybody from an early age.

Although it is difficult to see trends in caries prevalence by comparing recent figures with the earlier, pre-independence data, there is a consensus in all three Baltic countries that no decline in caries levels is discernible over

Table 1. Caries experience in children and adolescents in various developed countries*

Country	Age (years)							
	5-6		12		15		18	
	DMFS	% CF	DMFT	% CF	DMFT	% CF	DMFT	% CF
England	1.8	55	1.1	50	2.1	40		
Denmark	1.5	61	1.3	49	3.1	25	4.6	14
Finland	1.4	60	1.2	30	3.1	23	5.3	11
Iceland	2.9	40	2.5	23	5.3	9		
Norway	1.4	63	2.2	36			7.0	9
Sweden		64	1.5	48	3.6	70	5.2	58
Belgium	1.0	59	2.7	25				
Germany			2.5					
Netherlands	1.3	55		60				
Switzerland	1.6		1.1		2.2			
USA	2.0	50						
Canada	1.3	65	1.5					
Australia	2.0		1.2	55				

* Data derived from von der Fehr (2) and Marthaler et al. (4).
CF = caries-free.

the last decades. Both the health authorities and dental professionals appear to be aware of the problem and to be looking for solutions.

The challenge for those concerned with public dental health in these countries is how to accelerate the positive development of preventive policies and reduce the prevalence of caries. To do this it is necessary to discover which factors implicated in caries development differ significantly in the Baltic countries in comparison with, for example, Nordic countries and so discover the reasons for the continuously high caries levels.

Dental care and caries prevention

While the free, organized dental care system has been dismantled in these countries, there are active dental professionals in place who perform reparative treatment (Table 3). The restorative indices in Latvia and Estonia are not much inferior, for example, to recent British data (Table 4). A national survey showed that 91% of 15-year-old Latvians have had restorative treatment (5). However,

recurrent caries is rather frequent, being found on 15% of restored surfaces in 15-year-olds in one survey (5).

No organized prevention schemes currently exist in Latvia or, to my knowledge, in the other Baltic states. The caries-retarding effect of fluoride, however, is once again clearly demonstrated by the relatively low caries levels found in areas of Estonia with optimal or high fluoride content in the drinking water (6). Fluoride was also the significant explanatory factor in variance of caries levels in Lithuania (7). National fluoride dentifrices were not produced in the Soviet era, but independence brought the marketing of Western dentifrices to the Baltic states. A small investigation in Latvia demonstrated clearly that most well-known toothpaste manufacturers are now represented in that country. While remaining relatively expensive, fluoride dentifrices have thus been widely available in recent years (8).

According to recent studies (8), the majority of subjects questioned claimed to brush their teeth. These numbers are in accordance with Western data, but a closer look

Table 2. Caries levels in 12-year-olds in the Baltic countries compared with results of similar surveys from the Nordic countries

Country	Year of study	DMFT
Sweden	1994	1.4
Norway	1993	2.1
Iceland	1993	2.3
Finland	1991	1.2
Denmark	1994	1.3
Lithuania	1994	3.8
Latvia	1993	5.8
Estonia	1992	4.1

Table 3. Dentist-patient ratios in the Baltic countries

Estonia	1:1600
Latvia	1:1400
Lithuania	1:1700

Table 4. Restorative indices at 12 years and 15 years in each of the Baltic countries

Age (years)	Estonia	Latvia	Lithuania
12	50*	52**	30*
15	74**	61**	41*

* FT/DFT; ** FS/DFS.

Table 5. Oral hygiene and gingivitis in Baltic children aged 12–17 years

	Estonia	Latvia	Lithuania
Regular toothbrushers (%)	—	80	72
High plaque scores (%)	—	94	96
Bleeding gingiva (%)	100	90	—

showed little evidence that effective toothbrushing was practiced (Table 5). Nevertheless, the fact that a majority are at least pretending to brush their teeth is an achievement in itself and a step in the right direction. This is more a tribute to the relentless marketing efforts of dentifrice manufacturers in the mass media than to the efforts of the dental profession.

Sugar consumption in the Baltic states is sadly high, but it is high also in many countries where caries levels are not high and have even declined. An example is Iceland, which leads the world in per capita sugar consumption.

Conclusions

The aim of this article was to describe some of the factors relating to the continuing high prevalence of caries in the Baltic countries and to try to discover the reasons for this prevalence. The broad conclusion is that the differences in caries experience can be explained mainly by 1) the absence of organized prevention and 2) a low exposure to fluoride dentifrices. It should be noted, however, that while Baltic caries prevalence is relatively high by contemporary standards, just a couple of decades ago caries levels in the Nordic countries were twice as high as those currently reported from the Baltic countries (9). Indeed, in Iceland caries levels started to decline only about 10 years ago, and this has largely been attributed to the organized prevention (10).

Industrialized nations faced with the problem of rampant caries several decades ago initiated and implemented various preventive schemes to curtail tooth decay. These measures were often based on the classical method of trial and error. Now that caries prevalence is declining, it is often difficult to be sure what really was the most effective preventive measure, although we have learned a lot in the process. This knowledge could and should be applied to improve oral health in Baltic countries. It would be unfortunate if health administrators in these countries had to go through the same learning experience as Western countries instead of building on current knowl-

edge in an effort to reduce caries levels quickly and cost-effectively.

An effort must be made to persuade local health authorities to abstain from certain preventive measures now mostly abolished in the West, for example the use of fluoride tablets, and instead concentrate on methods of caries prevention that are realistic within the framework of the present economic situation and the existing health care infrastructure. The recent epidemiologic data presented here have indicated that increasing exposure to fluoride may go a long way in improving dental health in these countries. There remains, however, a need to increase individual awareness about maintaining good dental health. Maybe a well-targeted 60-second TV commercial would be more effective than an army of dental workers. It is important to remember that dental health seems to be largely independent of the manner of health care organization and even unresponsive to some costly and well-organized prevention schemes.

Acknowledgements.—I thank the organizers of the Reykjavik symposium for the invitation to present this paper, and my colleagues and co-workers who contributed data.

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