

Has caries merely been postponed?

Harald M. Eriksen

Department of Operative Dentistry, Faculty of Dentistry, University of Oslo, Oslo, Norway

Eriksen HM. Has caries merely been postponed? Acta Odontol Scand 1998;56:173–175. Oslo. ISSN 0001-6357.

During the last 25 years there has been a substantial caries decline among children and adolescents in many Western societies. Recent epidemiologic data show a reduced caries prevalence also in young adult cohorts, indicating that the caries reduction is maintained into adulthood. □ *Adults; dental caries; epidemiology*

Harald M. Eriksen, Faculty of Dentistry, University of Oslo, P.O. Box 1142 Blindern, N-0317 Oslo, Norway

During the last 25 years there has been a substantial reduction in dental caries prevalence among children and adolescents. This reduction amounts to 60%–80% in many Western countries and has been extensively documented (1, 2). The reduction is not shared by all. Some individuals still present with a high caries prevalence, which may obscure the general trend (3). However, it should be acknowledged that even these high-risk individuals have much lower DMF scores than commonly recorded a generation ago. At that time systematic extractions of first permanent molars were frequent among 9- and 10-year-olds and even considered a caries prophylactic measure in Scandinavia (4).

The documented caries decline is widely accepted, but discussions still persist as to what extent this decline represents a permanent improvement in dental health or

Table 1. Caries prevalence (DMFS) in 20-year-old Norwegian military recruits in 1958 and 1994

	<i>n</i>	D1+2 S	D3 S	MS	FS	D3MFS
1958 (6)	236	—	8.3	10.0	26.3	44.6
1994 (5)	814	8.6	4.7	0.1	11.1	15.9
Reduction		—	43%	99%	59%	65%

D1 and D2 refer to lesions confined to enamel while D3 is caries into dentin.

merely a delay in caries progression (3, 5). If the caries decline is permanent, a time-delayed decline in caries prevalence should be observable among cohorts of young adults. The purpose of this article is to focus on this question on the basis of empirical data.

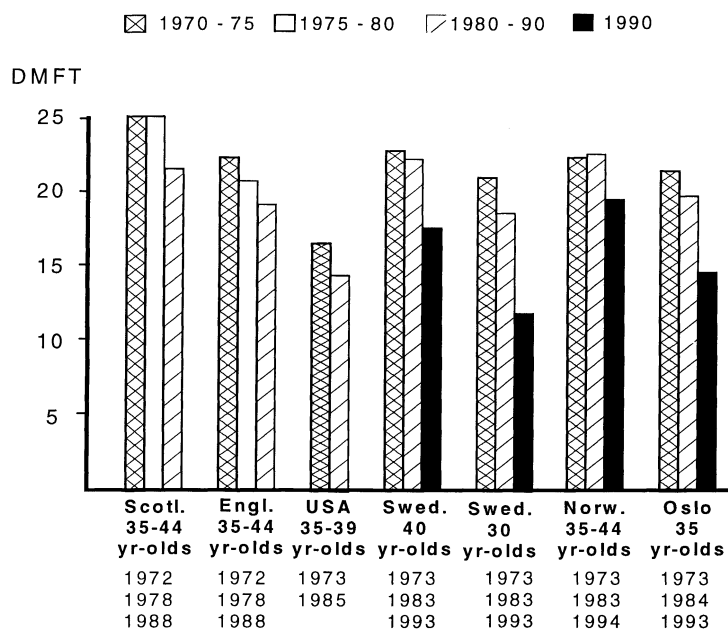


Fig. 1. A survey of caries prevalence in young adults from Western countries during the period 1972–93 (9–15).

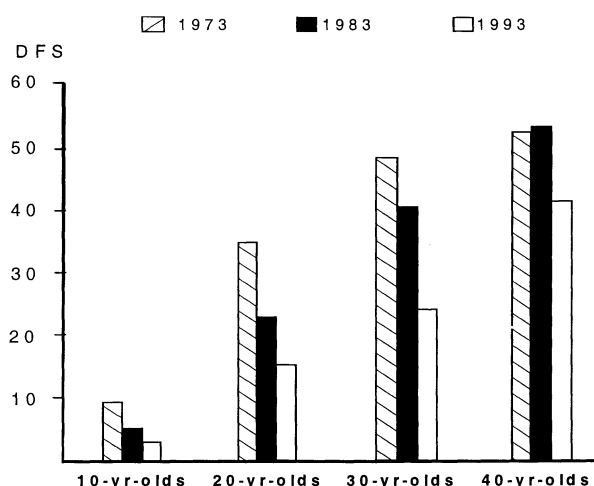


Fig. 2. Caries prevalence among 10-, 20-, 30-, and 40-year-olds from Jönköping, Sweden, over a 20-year period (9).

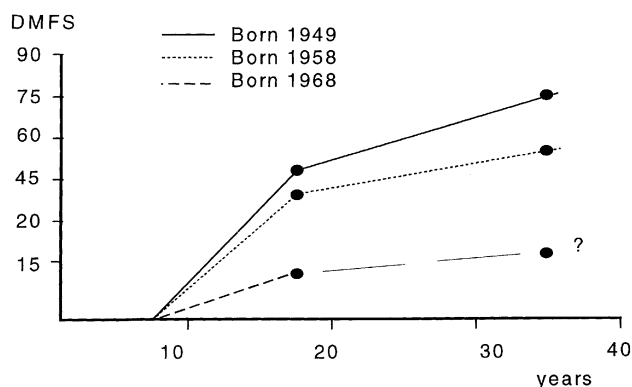


Fig. 3. Caries prevalence of 18- and 35-year-olds in Oslo, Norway, born in 1949, 1958, and 1968. The result for the 35-year-olds born in 1968 is projected on the basis of the previous two cohorts.

Military recruits constitute easily accessible cohorts well suited for monitoring changes in caries prevalence from adolescence to early adulthood. Birkeland et al. (5) detected an average of 4.7 dentinal caries lesions (D3 lesions) in Norwegian military recruits and 13.3 if enamel lesions (D1 and D2) were included (Table 1). These observations indicate a high degree of caries activity and support the hypothesis of delayed caries progression. However, when these findings are compared with similar data from Norwegian military recruits 35 years earlier (6), there seems to have been a 65% caries reduction during that period. A further indication of improved dental health is that, while in 1958 an average of 2 teeth (10 MS) were extracted per recruit (Table 1), there were no extractions in 1995. Improved dental health among military recruits has also been confirmed in a Danish (7) and a Finnish (8) report.

Epidemiologic dental health studies from many Western countries indicate a decrease in DMF scores among young

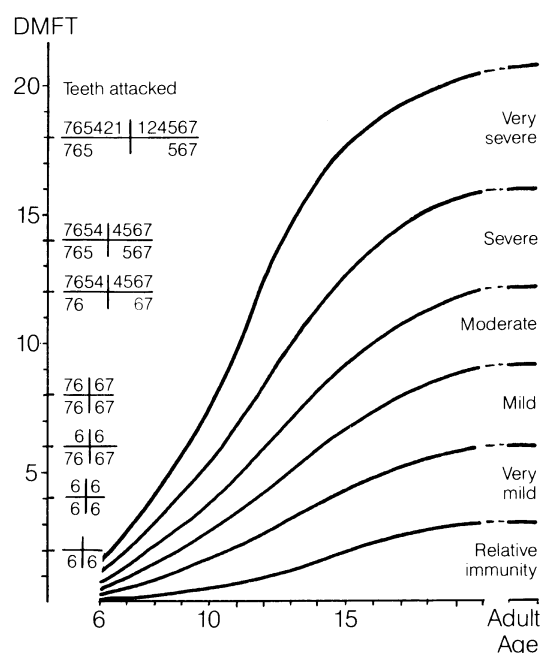


Fig. 4. Expected caries development in populations with different levels of caries activity (16), with permission.

adults, more pronounced in 20- to 30-year-olds (9, 10) than in 30- to 40-year-olds (9–15) (Fig. 1). This supports the hypothesis of a time delay (Fig. 2) and indicates a reduced caries prevalence transferred into adulthood. Another interesting and relevant perspective is conveyed by the Oslo investigation on 35-year-olds, correlating their final caries status with DMFS levels at the age of 18, when they left the public dental health service (15) (Fig. 3). The present trend is also corroborated by the results from older comparative epidemiologic surveys, indicating a permanent effect of an initially low level of caries activity (16) (Fig. 4).

In returning to the initial question—Is caries merely postponed?—it can be concluded that available empirical data from many Western societies unequivocally indicate that the caries reduction observed among children and adolescents is so far maintained as a permanent reduction in caries prevalence into adulthood. This confirms empirical data on caries trends presented by Massler et al. as early as 1954 (16) (Fig. 4).

References

1. Marthaler TM. Caries status in Europe and predictions for future trends [symposium report]. *Caries Res* 1990;24:381–96.
2. Marthaler TM. The prevalence of dental caries in Europe 1990–1995 [symposium report]. *Caries Res* 1996;30:237–55.
3. von der Fehr FR. Caries prevalence in the Nordic countries. *Int Dent J* 1994;44:371–8.
4. Syrrist A. Preventiva och interceptiva ingrepp vid störningar i bettutvecklingen. In: Toverud G, editor. *Nordisk lærebok i ped-*

- odonti. Stockholm: Sveriges Tandläkarförbunds Förlagsforening; 1963. p. 306–69.
5. Birkeland JM, Asmyhr O, Haugejorden O. Many carious lesions in 20-year-old Norwegian men in 1994 [abstract 88]. *J Dent Res* 1995;29:317.
6. Mjør IA. En undersøkelse på 236 rekrutter. *Nor Tannlegeforen Tid* 1958;68:418–9.
7. Antoft PE, Gadegaard E, Jepsen PJ. Caries experience, dental health behaviour and social status. A comparative study among Danish military recruits in 1972 and 1982. *Community Dent Health* 1988;5:255–64.
8. Ankkuriniemi O, Ainamo J. Dental health and dental treatment needs among recruits of the Finnish Defence Forces 1919–91. *Acta Odontol Scand* 1997;55:192–7.
9. Hugoson A, Koch G, Bergendal T, Hallonsten A-L, Slotte C, Thorstensson B, et al. Oral health of individuals aged 3–80 years in Jönköping, Sweden, in 1973, 1983 and 1993. II. Review of clinical and radiographic findings. *Swed Dent J* 1995;19:243–60.
10. Schüller A. Changes in oral health in Trøndelag Norway from 1973–1994. Abstract nr 39, NOF Meeting, Reykjavik, Iceland, 1997.
11. Brown LJ, Swango PA. Trends in caries experience in US employed adults from 1971–74 to 1985: cross-sectional comparisons. *Adv Dent Res* 1993;7:52–60.
12. Downer MC. The improving dental health of United Kingdom adults and prospects for the future. *Br Dent J* 1991;170:154–8.
13. Downer MC. Changing trends in dental caries experience in Great Britain. *Adv Dent Res* 1993;7:19–24.
14. Sheiham A. Changing trends in dental caries. *Int J Epidemiol* 1984;13:12–7.
15. Berset GP, Eriksen HM, Bjertness E, Hansen BF. Caries experience of 35-year-old Oslo residents and changes over a 20-year period. *Community Dent Health* 1996;13:238–44.
16. Massler M, Pindborg JJ, Mohammed CA. A compilation of epidemiologic studies in dental caries. *Am J Public Health* 1954;44:1357–62.