

Preventive dental care of children and adolescents in the 1990s: Denmark, Iceland, Norway, and Sweden

Nina J. Wang

Faculty of Dentistry, University of Oslo, Oslo, Norway

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This article describes the provision of preventive care for children and adolescents in Denmark, Iceland, Norway, and Sweden in the 1990s. It includes information on personnel giving preventive care, administration of the dental care system, strategies and methods used for prevention, and resources allocated for preventive dental care. In all these countries comprehensive and systematic dental care, subsidized or free of charge, has been instituted for children and adolescents. However, comparisons between the countries show significant differences in the organization of the dental care for children, the time used for preventive care, the recall routines, and the implementation of risk-based and population-based preventive strategies. The relative importance of different caries-prevention methods (fluorides, hygiene, and diet) reported by the clinicians varied between Denmark, Iceland, Norway, and Sweden. While variation poses rather than answers questions concerning effectiveness, available data provide evidence of differences in the input of resources. Unless the dental profession addresses the issue of effectiveness of preventive dental care, politicians and administrators in a cost-containment context will easily conclude that least is best. □ *High-risk strategy; personnel; population strategy; public dental care systems*

Nina J. Wang, Faculty of Dentistry, University of Oslo, P.O. Box 1109 Blindern, N-0317 Oslo, Norway

Denmark, Iceland, Norway, and Sweden share a common cultural basis and are often considered as a single entity (1). According to the dental legislation in these countries, emphasis is given to preventive dental care (2–4). In all four countries a similar, but not identical, decline in dental caries has occurred during the past 20 years (5).

The dental care systems in the four countries have many common characteristics compared with systems in other parts of the world (1). Care is subsidized or provided free of care for all children, and according to law, preventive care is to be given preference. In Denmark, Norway, and Sweden, the dentists who provide dental care for children are publicly employed.

This article will illustrate similarities and differences related to the provision of preventive care for children and adolescents in these four countries. Selected data on dentists giving preventive care, the dental clinics, the strategies and methods used for prevention, and the resources allocated for preventive dental care will be described.

The data come principally from a recent study performed in Denmark, Iceland, Norway, and Sweden (6). In this study questionnaires were mailed to 1082 dentists who provided dental care for children and adolescents in 1995.

Dentists providing preventive care for children

For all countries the mean age of the dentists providing dental care for children was fairly similar, ranging from 44 to 47 years, and the mean length of their working experience with children ranged from 18 to 20 years.

Despite some similarities, many factors varied between the countries. There was substantial variation regarding the proportion of dentists who worked full time, of female dentists, and of dentists who spent 50% or more of their working time with children (Fig. 1).

The dental clinics

Preventive dental care for children is delivered under somewhat different conditions in Denmark, Iceland, Norway, and Sweden. The clinics are small in Iceland, where on average fewer than 2 dentists provide care for fewer than 250 children, while the clinics are largest in Sweden, where on average more than 5 dentists (persons, not positions) provide care for more than 2500 children (Fig. 2).

As shown previously (7), Swedish clinics have ample numbers of assisting personnel per dentist. In 1995 the Swedish clinics had more auxiliary personnel, 2.4 auxiliaries per dentist, than the clinics in the other countries (Fig. 3).

Toward a risk-oriented strategy for prevention?

Traditionally, a population-based approach offering the same services to all has been applied in the public services in Scandinavia (1).

Using auxiliaries to perform routine examinations and extending and individualizing recall intervals are reforms to adapt the system to improved dental health (8–10).

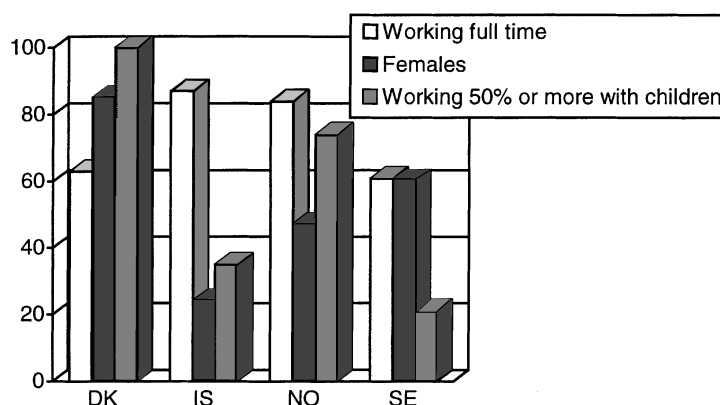


Fig. 1. Characteristics of dentists ($n = 1082$) working with children, by country (%). DK = Denmark, IS = Iceland, NO = Norway, SE = Sweden.

There are striking differences between on the one hand Norway and Sweden, where there is high use of auxiliaries as routine examiners, and on the other hand Denmark and Iceland, where there is minimal delegation of routine examinations to auxiliaries.

In 1995 Norway and Sweden had long recall intervals, while Denmark and Iceland had shorter intervals (Fig. 4). The greater prevalence of dental caries in Iceland may justify such practice, while there is no obvious explanation for the Danish routines. Compared with their counterparts in the other three countries, the Danish dental personnel are less responsible for care of adults and other patient groups in addition to children. This may have hampered appropriate changes to the Danish system.

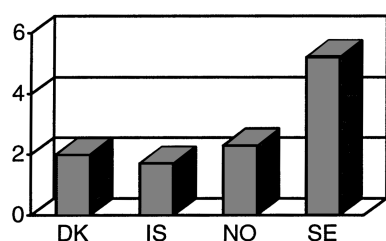


Fig. 2. Dentists per clinic, by country. For Denmark, Iceland, and Norway, number of dentist positions; for Sweden, number of persons in dentist positions.

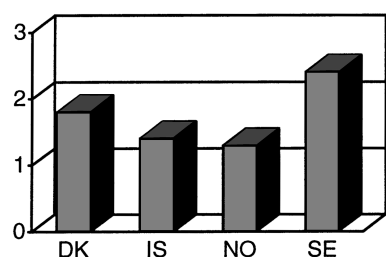


Fig. 3. Auxiliaries per dentist, by country.

Many Danish dentists claimed they provided group-based preventive care in settings such as schools and dental clinics in 1995 (Fig. 5). In Denmark high priority has been given to implementation by dental personnel of community-based oral health promotion since the beginning of the 1970s. The rationale for this practice in the 1990s may be questioned. In contrast, in the other countries the dentists claimed they provided group-based preventive care to a limited extent. The relative absence of group-orientated preventive activities reported by dental personnel in Norway, Sweden, and Iceland confirmed the trend toward reductions in population-orientated strategies that has been reported earlier in Norway and Sweden (11, 12).

Regarding individual preventive care, the Icelandic dentists claimed to use the same preventive methods for all children, while in the other countries the dentists reported that they distinguished between risk children and non-risk children, giving more information to the former.

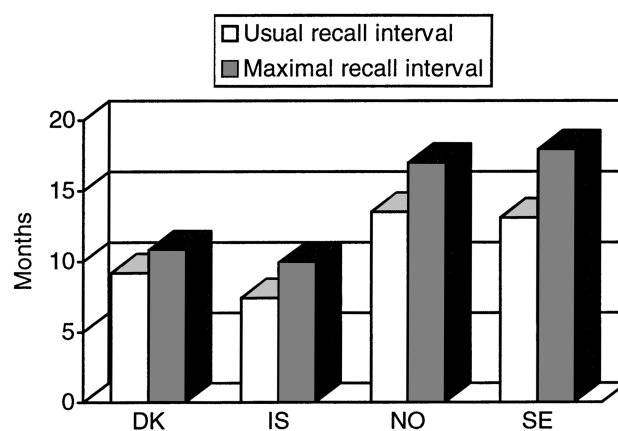


Fig. 4. The most usual recall interval and the maximal recall interval in the dental clinics, by country.

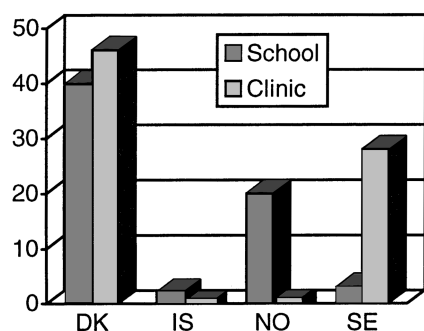


Fig. 5. Population-based preventive care. Percentages of dentists working in clinics where group-based preventive dental care was performed by dentists, by country.

Methods used for prevention

The dentists were asked what preventive information they considered to be the most important for a risk child. Nearly all Danish dentists claimed that information on oral hygiene was the most important advice; the majority of Swedish dentists considered dietary advice to be most important; while Icelandic and Norwegian dentists claimed that either fluoride- or hygiene-related advice was most important for children and adolescents at risk of dental caries (Fig. 6). Bratthall has reported that oral health experts hold conflicting opinions on the main reasons for the caries decline (13). When researchers disagree, it is not surprising that variations are found in clinical practice. Even when experts agree, practice will vary, as clinicians differ in their willingness to adopt available strategies.

The information base on which the choice of preventive methods was formed varied between dentists in the four countries (unpublished observation). Danish and Norwegian dentists trust their chief dental officers more than dentists do in the other countries. The Icelandic dentists used their own knowledge from their dental education,

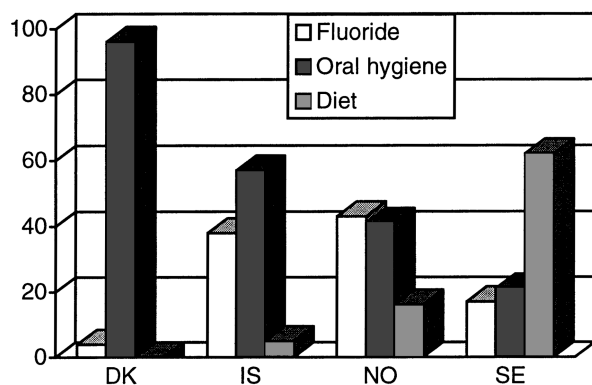


Fig. 6. Percentages of dentists by preventive method considered most important for a risk child, by country.

Risk children

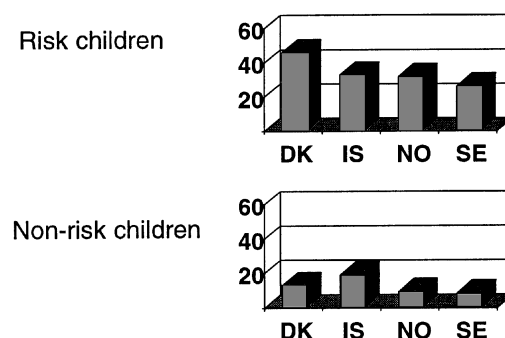


Fig. 7. Minutes used by dentists for preventive care of risk and non-risk children, by country.

while Swedish dentists to a greater extent relied on information from courses and meetings.

Resources allocated for preventive dental care

In Norway the total time allocated for dental care of children has decreased during the last 10 years as a consequence of changed dental health and a focus on the efficiency of public services (8). The same trend is observed in Sweden.

Data from 1995 showed that the time used for prevention per child per year by dentists was longer in Denmark and Iceland than in Norway and Sweden (6). Compared with their counterparts in the other countries, the Icelandic dentists also claimed to use a higher proportion of their working time for prevention. In Denmark and Iceland many dentists had increased the time for prevention during recent years, while in Norway and Sweden this time had been reduced.

Fig. 7 shows the time used for prevention for risk and non-risk children in 1995 by country. In all countries the time allocated for prevention was longer for children considered at risk than for others. The difference in time between risk and non-risk children was larger in Denmark, Norway, and Sweden than in Iceland.

Multivariate analyses showed that the time used for preventive care of both risk and non-risk children varied by country when controlling for factors related to the patient, the personnel, and the clinic. In dealing with risk children, in Denmark the preventive time was longer, and in Sweden the time was shorter than in the other countries. For non-risk children, Iceland allocated more resources, and Norway and Sweden allocated less resources than the other countries.

Conclusions

In 1995 substantial resources were allocated for preventive dental care of children and adolescents in Denmark,

Iceland, Norway, and Sweden. Provision of preventive care contributes considerably to the cost of dental care. As caries declines in the child population, the efficiency of this use of resources should be considered.

In the 1990s mainly risk-based preventive strategies were applied in the dental care of children and adolescents in Norway and Sweden. The Icelandic dentists and, to a certain extent, the Danish dentists seemed to rely on population-based strategies.

The preventive strategies and methods, along with the quantities of resources used for prevention, varied between the four countries in 1995. While variation poses rather than answers questions concerning effectiveness, available data provide evidence of differences in the input of resources. Unless the dental profession addresses the issue of effectiveness of preventive dental care, politicians and administrators in a cost-containment context will easily conclude that least is best.

As caries has declined in all of these countries during recent decades, the variations in preventive practices invite this question: Do the nature and level of professional preventive dental care have any effect on dental health?

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