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(Ed.)

A Nordic Project of Quality Indicators for Oral Health Care

Ett nordiskt projekt om kvalitetsindikatorer
för mun- och tandhälsövården

REPORT



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Preface

The Nordic Project of Quality Indicators for Oral Health Care was started during the Finnish presidency of the Nordic Council of Ministers in October 2007. The project was one of the four health care indicator projects financed by the Nordic Council of Ministers. The Nordic countries participating in the project were Denmark, the Faroe Islands, Finland, Iceland, Norway and Sweden. Frank Senderovitz from Greenland and Klas Silfverberg from the Åland Islands have attended some meetings, too. The project was also financed by the participating countries and by the Ministry of Social Affairs and Health of Finland.

Finland has been working as the project leader and coordinator. Many experts have taken part in the work which has been of great value to the project. Further information about expert work connected to the project can be found in Chapter 1 Mandate and organization of the working group and process of the project.

This project was the first joint project for quality indicators for oral health care in the Nordic countries financed by the Nordic Council of Ministers. The working group settled on 12 indicators for oral health care on which data was available at least in three Nordic countries. Extensive work was done in defining the indicators and ensuring the quality of collected data. The basic register data can be used for comparisons and benchmarking by the participating countries.

In the OECD reports only basic data on oral health is covered and therefore the working group recognizes a need to link this work with the OECD Health Care Quality Indicator project work.

In the future, more quality indicators for oral health care are needed and the working group stated the work should continue. The work will be continued during the next Finnish presidency of the Nordic Council of Ministers in 2011.

I express my sincere thanks to the working group members: Lene Vilstrup, Lisa Bøge Christensen, Sigrid Arge, Bergtóra Hanusardóttir, Leena Nuorteva, Annamari Nihtilä, Kaj Rönnberg, Helga Ágústsdóttir, Maren Mathiesen Wilberg, Trond Ekornrud, Lise Lund Håheim, Andreas Hedum and Jørgen Underthun, Marianne Appelquist, Andreas Cederlund and to all the experts working on this oral health care project. Especially I want to thank my colleagues Annamari Nihtilä who has had the reporting responsibility of this report and Leena Nuorteva who has acted as the project coordinator. The work has been very successful

and networking between experts has been excellent. I hope that we can meet in Finland again in 2011 and continue our work.

Anne Nordblad
Ministerial Counsellor
Project leader

Abstract

A Nordic Project of Quality Indicators for Oral Health Care. National Institute for Health and Welfare (THL), Report 32/2010. 76 pages. Helsinki 2010.

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The Nordic countries recognize the need to have quality indicators in oral health care in order to monitor oral health care quality and compare performance across the Nordic countries. Quality indicators are needed to improve the quality of oral health care on a documented basis and to move towards continuously improved outcomes of care.

The motivation for this project was the lack of common quality indicators in the Nordic countries even though in each participating country quality work in oral health has been done.

The working group's mandate stated that the project was to prepare a proposal and develop common Nordic Health Care Quality Indicators for Oral Health Care. The work should be linked with OECD and the previous EGOHID project. The working group's mandate period was set at three years and the project started in 2007. Denmark, the Faroe Islands, Finland, Iceland, Norway and Sweden participated in the project. Finland was the project coordinator.

The project began by mapping the oral health indicators used in Nordic countries and the philosophies behind them.

The indicators were chosen taking into account the ECHI (European Community Health Indicators) recommendations, OECD recommendations, the EGOHID work (European Global Oral Health Indicators Development -Project) and the specific Nordic interests.

The list of indicators was divided into four groups:

1. Structure indicators
2. Process indicators
3. Outcome indicators
3. Potential quality indicators; indicators to be developed.

The working group agreed on **4 structure indicators** (number of inhabitants per oral health care personnel under retirement age, number of inhabitants per working oral health care personnel under retirement age, number of dentists under retirement age per oral health care personnel, oral health service expenditure per capita), **3 process indicators** (the proportion of population who used oral

health services within a year, daily tooth brushing (more than once a day), consumption of non-diet soft drinks), **5 outcome indicators** (caries free children and adolescents, dental caries severity (mean DMFT) in children and adolescents, Significant Caries Index (SiC Index), edentulous prevalence in adults aged 65–74 years, functional occlusion prevalence in adults aged 65–74 years) and **3 potential quality indicators** (regular dental contact, self-assessed oral health status, oral disadvantage due to functional limitations). The inclusion criterion for indicators was that data was already available for at least in three Nordic countries for these indicators.

The scarce data available for some outcome indicators with the same definition illustrates the difficulty of obtaining uniform, current quality data on oral health in the Nordic countries. The working group did extensive work on defining the indicators and therefore most of the collected data can be used for comparisons and benchmarking, but still more work is needed to develop relevant quality indicators. The working group stated that all Nordic countries should work to obtain data on the agreed indicators using the same methodology, e.g., identical definitions and comparable age groups. In the future, more quality indicators on oral health are needed and the working group stated the work should continue. The following fields were considered important to have indicators on: access to care, patient satisfaction, periodontal diseases and their effective treatment, implants, coverage of orthodontic treatment, success of root treatments, and the prevalence of erosion. Future indicators need to be developed for each of these fields.

Keywords: quality indicators, oral health care, Nordic countries

Sammandrag

A Nordic Project of Quality Indicators for Oral Health Care [Ett nordiskt project om kvalitetsindikatorer för mun- och tandhälsovården]]. Institutet för hälsa och välfärd (THL), Rapport 32/2010. 76 sidor. Helsingfors 2010.

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De nordiska länderna inser behovet av kvalitetsindikatorer för tandhälsa för att man ska kunna följa upp tandvårdskvaliteten och jämföra prestationerna mellan de nordiska länderna. Kvalitetsindikatorerna behövs för att man ska kunna förbättra tandhälsovårdens kvalitet på en dokumenterad grund och för att ständigt nå allt högre vårdkvalitet.

Projektet föranleddes av bristen på gemensamma kvalitetsindikatorer i Norden, även om kvalitetsarbete i samband med tandhälsa har utförts i respektive land.

Av arbetsgruppens mandat framgick att projektet skulle förbereda ett förslag och ta fram gemensamma nordiska kvalitetsindikatorer för tandhälsovården. Arbetet skulle kopplas till OECD och föregående EGOHID-projekt. Arbetsgruppens mandatperiod fastställdes till tre år och projektet startade 2007. Danmark, Färöarna, Finland, Island, Norge och Sverige deltog i projektet. Finland fungerade som projektkoordinator.

Projektet inleddes med en genomgång av befintliga indikatorer för tandhälsa i de nordiska länderna och filosofierna bakom dem.

Indikatorerna valdes utifrån ECHI-rekommendationerna (European Community Health Indicators), OECD-rekommendationerna, EGOHID-arbetet (European Global Oral Health Indicators Development -Project) och utifrån de nordiska ländernas specifika intressen.

Indikatorerna delas in i fyra grupper:

1. Strukturindikatorer
2. Processindikatorer
3. Resultatindikatorer
3. Potentiella kvalitetsindikatorer – indikatorer som ska tas fram.

Arbetsgruppen enades om **4 strukturindikatorer** (antal invånare per legitimerad tandvårdspersonal under pensionsåldern, antal invånare per yrkesaktiv tandvårdspersonal under pensionsåldern, antal tandläkare under pensionsåldern per

tandvårdspersonal, tandvårdskostnader per invånare), **3 processindikatorer** (andel (%) av befolkningen som har besökt tandvården inom ett år, tandborstningsfrekvens (mer än en gång per dag), konsumtion av sockerhaltiga läskedrycker), **5 resultatindikatorer** (andel kariesfria av undersökta barn och ungdomar, medelvärdet för DMFT hos undersökta barn och ungdomar, SiC-index, andel (%) tandlösa 65–74-åringar i befolkningen, andel (%) 65–74-åringar som har minst 20 kvarvarande tänder i munnen) och **3 potentiella kvalitetsindikatorer** (andel av befolkningen som besöker tandvården regelbundet, självupplevd tandhälsa (munhälsa), självupplevd tuggförmåga). Det krav som ställdes på indikatorerna för att de skulle tas med var att det skulle finnas data om dem i minst tre av de nordiska länderna.

Bristen på data för några av resultatindikatorerna illustrerar svårigheten att få fram enhetliga och aktuella kvalitetsdata om tandhälsa i de nordiska länderna. Mycket arbete har lagts ned på att definiera indikatorerna och därför kan större delen insamlade data användas för jämförelser och benchmarking, men det krävs ändå ytterligare arbete för att utveckla relevanta kvalitetsindikatorer. Arbetsgruppen har betonat vikten av att alla nordiska länder arbetar för att få fram data om de överenskomna indikatorerna utifrån samma metoder, t.ex. identiska definitioner och jämförbara åldersgrupper. I framtiden krävs fler kvalitetsindikatorer för tandhälsa och arbetsgruppen var av åsikten att arbetet ska fortsätta. Det ansågs viktigt att ha indikatorer för följande: vårdtillgänglighet, patienttillfredsställelse, parodontit sjukdomar och deras effektiva behandling, implantat, omfattningen av ortodontisk behandling, resultatet av rotbehandlingar och förekomsten av erosion. För alla dessa områden behöver det utvecklas indikatorer.

Nyckelord: kvalitetsindikatorer, mun- och tandhälsovård, Nordiska länder

Tiivistelmä

A Nordic Project of Quality Indicators for Oral Health Care [Suun terveydenhuollon yhteispohjoismaiset laatuindikaattorit -hanke]. Terveyden ja hyvinvoinnin laitos (THL), Raportti 32/2010. 76 sivua. Helsinki 2010. ISBN 978-952-245-328-0 (pdf)

Pohjoismaissa tunnustetaan tarve suun terveydenhuollon laatuindikaattoreille, jotta suun terveydenhuollon laatua voidaan seurata ja vertailla Pohjoismaiden välillä. Laatuindikaattoreita tarvitaan, jotta suun terveydenhuollon laatua voidaan kehittää dokumentoiduista lähtökohdista ja näin edetä jatkuvasti parempiin hoitotuloksiin.

Projektin lähtökohtana oli yhteisten Pohjoismaisten laatuindikaattorien puute, vaikka jokaisessa osallistuvassa maassa laatuystävällistä suunterveydenhuollossa oli tehty.

Työryhmän toimeksiantona oli tehdä esitys ja kehittää yhteispohjoismaisia suun terveydenhuollon laatuindikaattoreita. Projektin tuli toimia yhdysiteenä OECD:n indikaattorityön ja aikaisemman EGOHID-projektin välillä. Työryhmän toimeksiannoksi vahvistettiin kolme vuotta ja hanke alkoi vuonna 2007. Tanska, Färsaaret, Suomi, Islanti, Norja ja Ruotsi osallistuivat työryhmään. Suomi koordinoi projektia. Hanke alkoi Pohjoismaissa käytettyjen suun terveydenhuollon indikaattorien ja niiden periaatteiden kartoittamisella.

Indikaattorit valittiin ottaen huomioon ECHI:n (European Community Health Indicators) suositukset, OECD:n laatuindikaattorisuosituksset, aikaisemman EGOHID (European Global Oral Health Indicators Development -Project) projektin työ ja erityiset Pohjoismaiset painotusalueet.

Indikaattorilista jaettiin neljään ryhmään:

1. Rakenneindikaattorit
2. Prosessi-indikaattorit
3. Tulosindikaattorit
4. Potentiaaliset laatuindikaattorit: kehittämistä vaativat indikaattorit.

Työryhmä sopi **4 rakenneindikaattorista** (alle eläkeikäisten suun terveydenhuollon henkilöstön määrä asukasta kohden, ammatissa toimivien alle eläkeikäisten suun terveydenhuollon henkilöstön määrä asukasta kohden, alle eläkeikäisten hammaslääkärien määrä muuta suun terveydenhuollon henkilöstöä kohden, suun terveydenhuollon kulut asukasta kohden), **3 prosessi-indikaattorista**

(hammashoidossa vuoden aikana käyneiden osuus väestöstä, päivittäinen hampaiden harjaus (useammin kuin kerran päivässä), sokeripitoisten virvoitusjuomien käyttö), **5 tulosindikaattorista** (karies vapaat lapset ja nuoret, keskimääräinen DMFT, SiC-indeksi, hampaattomuus ikäryhmässä 65–74-vuotiaat, toiminnallinen purenta ikäryhmässä 65–74-vuotiaat) ja **3 potentiaalista laatuindikaattorista** (säännöllisesti hammashoidossa käyneiden osuus väestöstä, itse arvioitu suun terveydentila, itse arvioitu pureskelukyky). Ensisijaisten indikaattorien valinnassa otettiin huomioon se, että tietoa näiden indikaattorien osalta oli saatavilla ainakin kolmesta Pohjoismaasta.

Tietoa oli helposti saatavilla valituille ensisijaisille rakenneindikaattoreille, prosessi-indikaattoreille ja joillekin tulosindikaattoreille. Muutaman tulosindikaattorin kohdalla tietojen saanti oli niukka ja tämä osoittaa, että Pohjoismaista on vaikea koota yhdenmukaista ja ajantasaista tietoa suun terveydenhuollosta.

Kerättyä tietoa voidaan käyttää maiden väliseen vertailuun ja benchmarking-analyyseihin, mutta merkityksellisten laatuindikaattorien kehittämiseksi on tehtävä edelleen työtä.

Työryhmä esitti, että kaikkien Pohjoismaiden tulisi tavoitella tietojen keräämistä sovitusta indikaattoreista käyttäen samoja menetelmiä esim. samanlaisia määritelmiä ja vertailukelpoisia ikäryhmiä. Tulevaisuudessa tarvitaan lisää suun terveydenhuollon laatuindikaattoreita ja työryhmän mielestä laatuindikaattorityön tulisi jatkua. Seuraavia osa-alueita pidettiin tärkeinä: hoitoon pääsy, parodontaalisairaudet ja niiden tehokas hoito, oikomishoidon kattavuus, juurihoitojen onnistuminen ja eroosion prevalenssi. Jokaiselle osa-alueelle tulisi tulevaisuudessa kehittää laatuindikaattoreita.

Avainsanat: laatuindikaattorit, suun terveydenhuolto, Pohjoismaat

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CHAPTER 1

Introduction

Oral health is an important element of general health and well-being. Although highly preventable, oral diseases are common in Nordic countries (WHO, 2003) and they represent a major public health problem. The costs of dental treatment are high both to the individual and to society. The concept of common access to health care in the Nordic countries originates from the idea that all citizens are entitled to care on equal terms. Assessing the quality of care is increasingly important to patients as well as providers, administrators, and purchasers of care. The motivation for this project was the lack of common quality indicators in the Nordic countries even though in each participating country quality work in oral health has been done. This work was linked with OECD Health Care Quality Indicators project and the previous European Global Oral Health Indicators Development Project (EGOHID). The EGOHID project (phases I and II) supported by the European Commission Health Monitoring Programme was carried out between 2002 and 2008. The aim of the project was to develop a set of indicators for monitoring and describing oral health morbidity and different aspects of oral health care systems in Europe. A set of 40 essential indicators in oral public health were identified. The results of EGOHID project were used in this project nevertheless the selected twelve indicators have a specific interest for the Nordic countries.

Mandate and organization of the working group and process of the project

The project was one of the four health care indicators projects financed by the Nordic Council of Ministers and starting in 2007 and the first project on oral health care. The working group's mandate stated that quality indicators in oral health care in the Nordic countries are needed and that the working group should

prepare a relevant proposal for quality indicators. The working group's mandate period was set at three years.

The Nordic Project of Quality Indicators for Oral Health Care was started during the Finnish presidency of Nordic Council of Ministers in October 2007. The Nordic countries participating in the project were Denmark, the Faroe Islands, Finland, Iceland, Norway and Sweden. The project was financed by the Nordic Council of Ministers, the participating countries and also by the Ministry of Social Affairs and Health of Finland.

The working group was organized as following:

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e.g. Jan Mainz (Nordisk Ministerråds styregruppe for kvalitetsmålingsprojekter i sundhedsvæsenet) jan.mainz@rn.dk have attended some of the project meetings. Also Jon Dahl (jed@niom.no) from NIOM (The Nordic Institute of Dental Materials), Frank Senderovitz (FRSE@gh.gl) from Greenland and Klas Silfverberg (klas.silfverberg@ahs.ax) from the Åland Islands have attended some of the project meetings.

Nine meetings, 6 in Finland, one in Sweden and two in Denmark have been carried out:

Meeting in Helsinki, Finland 11.5.2007

Meeting in Hanaholmen, Espoo, Finland 25–26.10.2007

Meeting in Stockholm, Sweden 23.9.2008

Meeting in Copenhagen, Denmark 20–21.4.2009

Meeting in Helsinki, Finland 21–22.9.2009

Meeting in Helsinki, Finland 3.12.2009

Meeting in Helsinki, Finland 26.1.2010

Meeting in Helsinki, Finland 7.4.2010

Meeting in Copenhagen, Denmark 7.9.2010

Oral health services in the Nordic Countries

Denmark

LENE VILSTRUP

Legislation

The organization of the oral health care system in Denmark is based on the Danish Health Act (Bekendtgørelse af Sundhedsloven nr 95 af 07. februar 2008) and the Government order of oral health care (Bekendtgørelse om tandpleje nr 727 af 15. juni 2007) that describes the overall structure of the oral health care programs and systems of subsidies of oral health care provided by the 5 administrative regions and 98 municipalities. The authorization of oral health care personnel (dentists, dental hygienists and dental clinical technician) and regulation of oral health care activity is founded in the Government order of authorization of health care personnel and health care activity (Bekendtgørelse af lov om autorisation af sundhedspersoner og sundhedsfaglig virksomhed nr 1350 af 17. December 2008). The National Board of Health is responsible for the legislation of oral health care personnel.

Oral health care system and national preventive programs

In Denmark the professional oral health care personnel include 7533 dentists, 2095 dental hygienists and 556 dental technicians (2010, authorization register, National Board of Health).

The oral health care system in Denmark is divided in a public and a private sector. Public oral health care programs for children are free of charge and are organized by the municipalities. The programs include all children and adolescents (0–17 years) with residence in the municipality and can be provided by public clinics or dentists with a private practice. In 2007 88 % of the children received oral health care in public clinics where 12 % received oral health care in private practice. The oral health care covers individual and general oral prevention and oral health promotion, regular oral clinical examination, dental care and orthodontic treatment after defined criteria. In 2007 had 26,5 % of the 15 year-olds received orthodontic care. A specialized public oral health care program for children free of charge is provided by the regions, and gives specialized treatment of dental anomalies ex. agenesis of permanent teeth. The two public odontological knowledge centers placed in relation to the two largest hospitals in Denmark give highly specialized consultancy and treatment for children and adults with rare diseases that cause oral anomalies or disturbances, and are financed by the regions. Public oral health care programs (“omsorgstandpleje”) for adults (18+) who because of reduced mobility or reduced physical and psychological functional capacity only with much difficulty can use private practice are provided by the municipalities in public clinics or dentists with a private practice. In 2007 30.502 adults received “omsorgstandpleje”, 91 % in public clinics and 9 % in private practice. The oral health care covers individual and general oral prevention and dental treatment. The patient’s annual fee is maximum 59 Euro. Public oral health care programs for children and adults who because of mental illness or a mental handicap need specialized oral care are provided by the municipalities in public clinics often placed in relation to hospitals. The oral health care covers oral prevention and dental treatment often in general anaesthesia. The patient’s annual fee is maximum 222 Euro. Adults with Sjögrens Syndrome or cancer can receive subsidy for oral health care by the regions. The patient’s annual fee is maximum 222 Euro. Oral surgery in hospitals is provided by the regions. The specialized treatments in oral surgery in hospital are defined in the Specialty guide for dental, oral and jaw surgery by the National board of health. (Specialevejledning for tand- mund- og kæbekirurgi). Oral health care for adults (18 years+) are provided

by private dentists or dental hygienists' by patients own choice. The regions give partly subsidies to oral health care for adults with the priority on prevention and basic oral health care. Oral examination, scaling, individual prevention, treatment for dental caries and periodontal disease, root canal treatment, extractions and oral surgery are subsidized and the refund rates vary from 30–65 % depending on the patients age and the actual treatment. For most adults orthodontics, crowns and bridges and removable prosthodontics are paid by the patient. The subsidies of oral health care for adults are described in two Government orders of subsidies to oral health care by dentists or dental hygienists in private praxis. (Bekendtgørelse nr. 956 af 23. september 2008 om tilskud til behandling hos tandlæge i praksissektoren, Bekendtgørelse nr. 461 af 22. maj 2007 om tilskud til behandling hos praktiserende tandplejer i praksissektoren). The subsidies are further described in Agreement between the Danish Dental Association and the National Health Service (Overenskomst om tandlægehjælp af 24.oktober 2006). The social security law directs the municipalities to give subsidy to oral health care for people having a low income, receiving social security and pensioners.

Financing

The public oral health care system in Denmark is funded by general taxation. In 2005 the overall costs of the public oral health care program and subsidies were 1.809.000.000 kr (= 243.083.084 €). In same year public regional subsidy on oral health care for adults in private practice was 1.236.000.000 kr. (= 166.086.617 €) where 344.000.000 kr. (= 46.224.754 €) was paid by social security. In total public expenses on oral health care in 2005 was 3.390.000.000 kr. (= 455.528.930 €). The patients out of pocket expenses on oral health care are in 2005 estimated to 5.364.000.000 kr. (= 720.783.671 €). The total costs of oral health care in Denmark are thus 8.754.000.000 kr. (= 1.176.312.501 €). In 2010 1.421.536 adults have a private health insurance in “Health Insurance Denmark” that includes dental care. In 2009 Health Insurance Denmark had costs on 822.600.000 kr. (= 110.536.299 €) for oral health care.

Education/training

In Denmark there are two dental schools placed within the Faculty of Health Sciences at the two largest universities. To enter a dental school the student needs to have completed upper secondary school with good grades. The dental education is state-founded and lasts 5 years with a bachelor degree after 3 years. The quality of the dental education is evaluated by an independent Accreditation

Council (ACE Denmark). After graduation from the dental school the candidate receives authorization as a dentist at the National Board of Health and this gives the right to work as an employed dentist. Permission to work independently as a dentist is given by the National Board of health after one year and 1440 hours of clinical work with children and adults under supervision.

The two dental specializations include oral surgery (5-year curriculum) and orthodontics (3-year curriculum). The quality of the dental specialist educations is evaluated by the “Inspector System” at the National Board of Health.

the Faroe Islands

SIGRID ARGE

Oral health care system

In Faroe Islands oral healthcare is provided in two ways. For children under the age of sixteen all care is free of charge and is usually provided at public clinics. For adults a system of government subsidies is available through private dental practitioners for most common types of treatment.

Dental services for children

Dental services for those aged 0 to 16 are offered by the municipals (*kommunur*) and all treatment is free of charge, including orthodontic treatment, according to guidelines issued by the Danish National Board of Health (Sundhedsstyrelsen).

The service is organized in three ways:

1. Offered at a public clinic by dentists employed by the municipality.
2. The municipality contracts a private practitioner of their own choice to treat the children.
3. A “combined” dentist, who is part time employed by the municipality to take care of the children and part time the dentist functions as a private practitioner treating adults. The municipalities own the clinics and the dentists rent the equipment part time.

Free dental care for children at the age 7–14 has been offered in the Faroe Islands since 1938. Until 1957 private practitioners took care of the children, paid by the municipality. After 1959 most places built public clinics, most often situated at schools.

During the 1960's there were too few Faroese dentists to meet the demand. Therefore collaboration between the children's dental care of Copenhagen and the Faroese Dental Association was established. During 6 weeks in summertime Faroese children and adults were treated by these "summer birds" at the public clinics, i.e. dentist usually working in Copenhagen. In the mid 1970's several young Faroese dentists were fully educated and returned back home. Since then the Faroe Islands have been self-sufficient concerning dentists.

Since 1994 also children at the age 0–7 years and 14–16 years have received free dental care.

Dental services for adults

All payments to dentists are by way of "item of service" fees.

For adults, a system of subsidies for dental healthcare was made according to an agreement between the National Health Service (Heilsutrygd) and the Faroese Dental Association (*Tannlæknafeлагið*). Under this system the patient pays one part of the fee to the dentist. The other part is claimed through the National Health Service (Heilsutrygd).

The main treatments, for which subsidies (45%) are partly given, include examinations, x-rays and diagnosis, fillings, oral surgery, perio- and endodontics. For most adults, anesthesia, orthodontics, crowns, fixed and removable bridges and implants have to be paid for in full by the patient.

Estimated refund from the National Health Service amounts to 20-25% of the total turnover of the private clinics.

Free dental care is only available for adults if:

- a. the treatment needs to be carried out in a hospital
- b. some congenital deformities of the jaws and teeth, i.e. orthognatic surgery of different kind and patients with cleft lip and palate
- c. by application for social aid to the Faroese Social Service Department (Almannastovan).

Education/training

Most / all the Faroese dentists study or have studied at Danish universities.

To enter dental school a student needs to be a secondary school graduate, as "Student" or similar. The education lasts 5 years (with a bachelor degree after 3 years). Dental education is state-funded. There are no tuition fees.

Faroese students are considered Danish in this context and receive same benefits.

Finland

ANNE NORDBLAD, ANNAMARI NIHTILÄ

Legislation

In Finland, the state's responsibility to promote welfare, health and security is rooted in the **Constitution**. This enshrines the right of everyone to income and to care, if they are unable to manage adequately. The duties of municipal authorities throughout Finland to arrange social and health care services are stipulated by laws on social and health care planning and the central government transfers to local government. The **Public Health Act 1972** stipulates the services that municipalities must produce. The **law on the status and rights of social care clients** includes issues of data security. Laws on primary health care and specialised medical care cover health services. There are separate laws on **occupational health care, mental health services** and the **prevention and treatment of infectious diseases**, and the **status and rights of patients**. Legislation also covers the **professional standards** of social and health care personnel.

Oral health care system

Finland is the eighth largest country in Europe in terms of area and the most sparsely populated country in the EU. It has a population of 5.35 million (2009). The OECD review of the Finnish health system was published in the end of 2005. Review notes some essential differences in the way Finland and other Nordic countries organize healthcare, though all are often characterized as representing an undifferentiated Nordic “model”. The Finnish system is generally decentralised and has a more mixed basis of funding. Two channels provide public funding: municipal health expenditure and the National Health Insurance scheme provided by KELA, The Social Insurance Institution of Finland.

Oral health services are provided both by the public and private sectors. In 2008 there were 4110 licensed dentists, of whom more than 50% are working at the public dental services (PDS). In addition there are about 1750 dental hygienists.

Since December 2002, the entire population has been covered by public oral health care services, and has been entitled to reimbursements by National Health Insurance. All children under the age of 18 years are entitled to care free of charge in the PDS, including necessary orthodontics. Patients at 18 years of age or older have to pay fees of the oral health care services at the PDS. If patients use private dental services, part of the treatment costs will be covered by health insurance. The number of oral health care visits increased during 2002–2004 somewhat;

in particular those age groups that were not previously covered by services at reduced prices accounted for this change. The visits increased especially among people who had previously visited a dentist more than two years ago. Oral health care has been developed by adjusting the division of tasks between professional groups in oral health care.

In March 2005 new legislation (Acts 855–858/2004, Decree 1019/2004, Government Bill 77/2004) took effect in Finland stating that non-urgent treatment and examinations at health centres and hospitals must be provided within clear time frames. Oral health care was included in this reform which now stands as an important basis for the oral health care services at health centres. According to the law patients must be able to contact their health care centre immediately by phone during office hours. This also covers oral health care services. The need for oral treatment is assessed during this initial contact by a dental nurse. Any treatment that is considered odontologically necessary must be provided within a reasonable time frame, within six months at the latest. Access to oral health care has been impaired by lack of dentists. It has not been possible to fill all dentists' positions, which has caused problems in the PDS. Ministry of Education has now decided to increase the number of new dental students in Finland.

National preventive programs

Health promotion is founded on Public Health Act and is part of public health work. The municipalities are responsible for organizing oral health services including oral health promotion and preventive care. Preventive care for children and adolescent is defined in more detail in a regulation. Access to preventive oral health care is included in the uniform criteria for access to non-emergency treatment. The policy programme for health promotion enhances health promotion also in oral health care. The programme is being put into practice by extensive network in oral health care.

Financing

Some 46 per cent of the total dental care expenditure is financed by public resources (state, municipalities and National Health Insurance). The private funding consists mainly of households' own liabilities that they have to pay after the reimbursement of National Health Insurance. As an average the household paid 27 per cent of the costs of primary health care as user fees. Of private dental care the National Health Insurance reimbursed about 37 per cent and the rest 63 per cent was covered by households.

Expenditure on oral health care amounted to 5.2 per cent of the total health care expenditure in 2006 (according to OECD System of Health Accounts -methodology). In 1995 the share was 4.0 per cent. The increase is mainly due to the enlargement of the oral health care to cover the whole population since 2002 as described above.

Education/training

There are three dental schools (fourth will be opened in fall 2010) and they are part of the Faculties of Medicine. To enter dental school a student has to have completed secondary school. There is an entrance examination, which is similar to that of medical students. The undergraduate course lasts for 5 years.

The areas of dental specialization include Oral and Maxillofacial Surgery (6-year curriculum, in accordance with to the European Association of Oral and Maxillofacial Surgery), Orthodontics (3-year curriculum, in accordance with the European Union guidelines), Clinical Dentistry (3-year curriculum, including specialist studies in Cariology and Endodontology, Periodontology, Prosthodontics, Oral Radiology, Oral Pathology, Oral Microbiology, Paediatric Dentistry) and Public Health (3-year curriculum, no clinical training included).

Iceland

HELGA ÁGÚSTSDÓTTIR

Legislation

The Ministry of Health in Iceland has the responsibility for administration and policy making of health and health insurance issues in Iceland as prescribed by laws, regulations and other directives. The overall organization of the Icelandic health care system is described in the act on health care services ("Lög um heilbrigðisþjónustunr.40/2007" <http://www.althingi.is/lagas/nuna/2007040.html>) and the structure of the Icelandic Health Insurance is based on the act on health insurance "Lög um sjúkratryggingar nr. 112/2008" <http://www.althingi.is/dba-bin/unds.pl?txti=/wwwtext/html/lagasofn/138a/2008112.html&leito=sj%FAk ratryggingar#word1>. Licensing of dentists and other oral health professions is founded on the act on health care professions nr. 24/1985 and the act on dentistry "Lög um tannlækningar nr. 38/1985" <http://www.althingi.is/lagas/nuna/1985038.html> The act on patient rights "Lög um réttindi sjúklinga nr. 74/1997" <http://www.althingi.is/lagas/nuna/2009055.html> as well as the act on patient records "lög um

sjúkraskrár nr. 55/2009” <http://www.althingi.is/lagas/nuna/2009055.html> and act on data protection “lög um persónuvernd og meðferð persónuupplýsinga” nr. 77/2000” cover the issues of patient rights and data protection.

Oral health care system

Oral health care in Iceland is provided by private practitioners. There are no public dental services in place. Public school dental clinics operated in the capital Reykjavik from the year 1922, but only few were left when the school dental system was fully abandoned in the year 2002. Children up to the age of 18 years old can get part of their dental cost reimbursed by the state as can old-age-pensioners 67 years old and older and the disabled.

In 2009, the number of registered dentists in Iceland was 369, of whom 276 (75%) were active, making the population per dentist ratio 1156:1. Most dental practices are small and all are privately owned. Iceland has a small population of 319 thousand people (2009). Two-thirds reside in or very near to Reykjavik (the capital). Even though the rest of the population is spread around the vast coastline of the island, access to dental care is no longer perceived to be a problem. Satellite clinics serve the more thinly populated areas and means of transportation have improved in the last decades. The national health insurance scheme offers partial reimbursement of the cost of dental treatment for those under 18 years or over 67 years of age as well as long-term patients and the disabled. For those under 18 years, 75% of the cost of most dental treatments, with the exception of gold crowns, bridges and orthodontics, are reimbursed. The Icelandic Health Insurance pays according to a public fee schedule set by the state. These fees are generally different from the fees used by private dental practitioners, since private dentists in Iceland set their own fees. A contract is in place now between the majority of active dentists and the state where 3-yrs and 6-yrs old children can get an oral examination, fluoride varnish and prophylaxis with oral hygiene instructions and instructions on diet and lifestyle at a set fee which is reimbursed fully by the Icelandic Health Insurance. 12-year-old children get the same plus x-rays if needed. Those who need orthodontic treatment receive a fixed subsidy of 150 thousand ISK, EUR 993 (rate 1 Euro = 150 ISK 15. Sept 2010) under special rules. Complete and partial dentures are covered, but not crowns and bridges. Implants for use with attachments under overdentures are partially covered. Reimbursement of the cost of dental treatment is not available to the rest of the population. No private dental insurance is available.

National preventive programmes

Bi-weekly fluoride rinse programmes for 6, 12 and 15-year-olds have been implemented in majority of elementary schools by the local health agencies. The drinking water in Iceland has never been fluoridated and the fluoride levels in the drinking water are below optimal levels.

Financing

In 2008, total expenditure on health was 9.16% of GDP and public expenditure on dental care was 0.09% of GDP. Private expenditure for dental care was about 80% of the total expenditure on dental care. Total expenditure on dental care from both private and public sources was 0.54% of GDP or about 25 000 ISK per capita.

Education/Training

Undergraduate education: There is one dental school in Iceland and seven students graduate annually after a six year course. There is also a steady inflow of Icelandic dentists who have graduated from dental schools in Scandinavia and other European countries. Only a few dental hygienists practice in Iceland (15 in 2009), and most of them are employed in private dental offices.

Postgraduate education: No specialist training is offered at the University of Iceland. Icelandic dentists have sought their postgraduate training to other countries, especially the U.S.A. and the other Nordic countries. Specialist training needs to be a minimum of three years for a specialist license. The following specialties are recognized as specialties in Iceland: Orthodontics, Oral Surgery, Oral Radiology, Endodontics, Periodontics, Pedodontics, Gerodontics, Prosthodontics, Public Dental Health, Occlusion (Bettfysiologi), Operative Dentistry and Oral Medicine.

Norway

MAREN MATHIESEN WILBERG, LILJAN SMITH AANDAHL, TURID ALBUM ALSTAD, TRINE ORTEN GROVEN, LISE LUND HÅHEIM

Legislation

Legislation and standards for quality work in oral health are The Oral Health Service Act of 1983 (“Lov om tannhelsetjenesten”), and The Act of Health Personnel of 1999 (“Lov om helsepersonell”). The Oral Health Service Act establishes the

county (19 counties in total) as the primary authority responsible for giving oral health services to the groups listed in the Act. The Act of Health Personnel seeks to ensure that dental services are given justifiable.

Oral health care system

Oral health care in Norway is divided into a public and a private sector. The Norwegian public dental care system was formalised in 1950, and is implemented by virtue of The Oral Health Service Act of 1983 (see text above). The Public Dental Service (PDS) is country-wide and organized and funded by the counties. About 20 % of the population received oral health care from public dental clinics in 2008. Oral health care for adults is mostly provided by private dental care providers. In the public clinics, all oral health care and treatment is provided free of charge to four of the groups listed in the Oral Health Service Act. The groups are as follows:

- a. Children and young people aged 0–18 years
- b. Mentally disabled persons both living in institutions and at home
- c. Groups of elderly and long-term care patients living in institutions or receiving care at home
- e. Other groups that the county give priority to Group d; Youth aged 19 and 20, pay a 25% fee of fixed fees given from the Ministry of Health and care services. The public clinics can also treat patients that do not belong to these groups if capacity allows. These people pay fees given from the regional PDS.

National preventive programs

Taking effect from 1 January 2010, the Public Health Act (Lov om fylkeskommuners oppgaver i folkehelsearbeidet) places the overall responsibility for promoting and coordinating public health initiatives, both regional and local, to the County level. At this point, there are no national preventive programs directed towards improving people's oral health. The PDS-personnel contributes widely into the more general public health initiatives, both at the regional and at the local level. A national network for public health initiatives in the PDS is established.

Financing

Treatment in the PDS is free of charge for the specified groups listed, except for orthodontic treatment. Parents/responsible adult have to pay a part of the cost for orthodontic care, depending on the degree of malocclusion. There is also a family reduction for families with more than one child in need of orthodontic treatment. For some oral diseases and general diseases that can influence oral health status,

the National Insurance System (NIS) will provide some or full reimbursement*. People with very low income can apply for financial support from the Social Welfare system, which then can cover some or all of their oral health expenses. The rest of the population pay out of pocket.

The following diagnoses release reimbursements: Rare medical diagnosis (from a list), cleft lip, jaw or palate, oral cancer, immune system depression, surgical orthodontic and periodontal treatment and rehabilitation, severe pathological attrition, hyposalivation, allergy to dental restorative materials, dental trauma and lack of ability for self care. There is a “high cost protection” system for patients with some of these diagnoses at 2 500 NOK (EUR 300): This is the maximum payment for out of pocket payment for these patients. There is a list of treatments that are covered by this high cost protection.

- * In Norway there is no public regulation of dental fees in the private sector. This leads to variations in how much patients have to pay when a disease releases reimbursement from the NIS. The reimbursement is based on fixed prices set by the national health authorities. These prices are in general lower than the fees applied by dentists, both in public and private sector, leaving the patient a gap between the reimbursement sum and the actual price.

Education/Training

To enter dental school in Norway, applicants must have a general matriculation standard. This means completed higher secondary school, with advanced courses in mathematics, physics and chemistry. Dentistry is a five year master study in Norway, and is offered at three public universities: Bergen, Oslo and Tromsø. There are no private dental schools. Approximate number of candidates at each university per year is 48, 65, and 40, respectively. For dentists, there is organised postgraduate training for specialists at the universities in seven dental specialities: endodontics, orthodontics, oral radiology, pediatric dentistry, periodontics, prosthodontics and oral surgery/-medicine. The first six are three year studies, and oral surgery/-medicine is five. An eighth speciality; clinical dentistry (klinisk odontologi), is under evaluation at the University in Tromsø. All postgraduate specialist training is free of charge. Dental Hygienist training is a three year bachelor study, and is provided at the same three universities as dentistry, as well as at one University College (Høgskolen i Hedmark). There are plans for starting Dental Hygienist training in other university colleges.

Sweden

ANDREAS CEDERLUND, MARIANNE APPELQUIST, MARIANA NÄSLUND-BLIXT

Legislation

The goal of dental care is, according to the Swedish Dental Act (SFS 1985:125), a good dental health and dental care on equal terms to all people. The law sets a series of demands for dental care so that it will live up to the requirement of a good and safe dental care. The Dental Act gives Sweden's county councils the responsibility to provide children and adolescences a full and regular dental care. The county councils should also ensure that those who reside in the county council have access to good quality dental care, including specialist care.

The Law on state dental care financial support system (SFS 2008:145) contains rules for Sweden's new state dental care financial support system. The foundation of the dental aid is that compensation are provided to preventive dentistry, and dental care that patients need and which aims to achieve

- freedom from pain and illness,
- the ability to eat, chew and speak without any major obstacles or
- an appearance acceptable result.

Dental care aims at preserving the mouth tissues as much as possible.

Oral health care system

Sweden is geographically a fairly large country by EU standards. However, it has a relatively small population (9.3 million in 2009). The country is divided into 290 municipalities, 18 county councils and two regions. The county councils and regions are responsible to provide public oral health care. Out of Sweden's 7 500 practising dentists, about 4 200 work in the public sector and 3 300 in the private sector. Some 3 300 dental hygienists support the work of the dentists.

The Public Dental Service (PDS) was founded in 1938. Initially, its purpose was to establish a systematic oral health care system for children and teenagers. At present, the PDS offers systematic dental care to all children up to the age of 19 years and specialist treatment for both children and adults. Adults of all ages also have the right to use the PDS within available resources.

In Sweden dental care is free up to and including the year in which you reach the age of 19. People 20 years and older are covered by a dental insurance system.

In 2008, a new state dental care financial support system for people aged 20 or more was introduced. The support consists of a dental care voucher (a general

dental care allowance), which can be used as part payment for a dental care check-up at any dentist or dental hygienist, and a high-cost protection scheme. The value of the dental care voucher is SEK 300 (EUR 31) for persons aged 30–74 years and SEK 600 (EUR 61) for those aged 20–29 years and 75 years and older. The dental care voucher is issued every year and can be accumulated for two years.

The high-cost protection scheme does not reimburse any of the costs below SEK 3 000 (EUR 307). From SEK 3 000 to SEK 15 000 (EUR 307-1534) the insurance reimburses 50% of the cost, while 85% is reimbursed for costs exceeding SEK 15,000 (EUR 1534). Compensation levels are based on “reference prices”. Not all types of dental care are reimbursable under the new support system. Based on a diagnosis made by the dental care provider or a predefined condition, certain measures qualify for dental care support. Preventive measures and treatment of diseases are given high priority. Reimbursable dental care shall be both cost-effective and economically efficient. A system of reference prices (including for instance implants and orthodontics) is used in order to gain control over the costs for the dental insurance. These reference prices constitute the basis for the calculation of the dental care compensation as a part of the high-cost protection scheme and shall enable patients to compare dental care prices. Patient fees, both in the public and private sectors, are not regulated by the government and the price for the patient may vary depending on their choice of dentist/dental hygienist.

For specific groups of patients, for instance elderly people living either in nursing homes or their own homes with social and nursing support, there are special arrangements for both the provision and funding of oral health care. Such patients are often identified via free outreach activities. In 2008, about 165 000 patients were estimated to be entitled to free outreach care.

National preventive programmes

The county councils and regions create their own prevention programs for children and adolescents in each county. This implies that prevention programs may look a little different over the country and that in Sweden there is no single national prevention programs.

Financing

The new public dental health insurance for adults is estimated to cost the state about **SEK 6.000.000.000** per year. The county councils’ contribution to children’s oral health care was estimated to be **SEK 2.300.000.000 in 2008**.

Education/training

Sweden has eight authorised specialties in dentistry: oral surgery, oral radiology, orthodontics, endodontics, periodontics, oral physiology, pedodontics and prosthodontics. Specialist training shall be a minimum of three years including clinical and theoretical education.

Dental hygienist training is provided at eight universities. The training of dental hygienist is three years long. At six of the universities, the students may choose to discontinue studies after two years and receive their dental hygienist license.

Quality work in oral health in the Nordic Countries

Denmark

LENE VILSTRUP

In order to provide equal quality in the public oral health care programs detailed directions are given by the National Board of Health about the organization and content of the programs (Guidance of the scope and requirements for the municipal and regional oral health care programs, 2006). The National Board of Health has by law since 1972 systematically annually collected individual data on oral health among children in order to describe and evaluate the oral health situation on a local and national level.

The Regions monitor standards of oral health care for adults by auditing the oral treatment figures which every dentist has to submit in order to claim public subsidy. The Regions collect annually individual data on oral health among adults, data are published by the National Board of Health in order to evaluate the oral health situation among users of private oral health care for adults.

The National Board of Health receives reports from the national and regional patient's complaints boards on all complaints against dentists, dental hygienists and clinical dental technicians. In addition, the National Board of Health receives letters from individuals, colleagues and the press. Based on this the National Board of Health keeps supervision of dentists, dental hygienists and clinical dental technicians and can reduce or eliminate an existing legislation.

The National Danish health Care Quality Assessment program will during the next 3 years gradually be implemented in the public and private oral health care. The Quality program is based on evaluation of accreditation standards for oral health care.

the Faroe Islands

SIGRID ARGE

The Faroese dentist have, not by law, but by choice, agreed to follow the detailed guidelines given for children public dentistry and oral health by The National Board of Health in Denmark.

Likewise statistical data (SCOR) is systematically collected annually on the 3, 5, 7, 12 and 15 years old children of the Faroe Islands, as it is in Denmark.

Oral health service for adults has not been correspondingly regulated, but the new National Health Service, which has just started in January 2010, should make data collection on adults much easier to achieve in the future.

Finland

ANNE NORDBLAD, ANNAMARI NIHTILÄ

Legislation and standards for quality work in oral health

Health care patients in Finland are entitled to timely and good quality health care attention and treatment (Act on the Status and Rights of Patients). In general, however, the legislation does not regulate in detail the quality of public or private oral health care services. Uniform criteria for access to non-emergency treatment have been developed including oral diseases. Dentists use these criteria as a guide when deciding on the treatment of patients, taking into consideration the patient's individual situation and need for treatment. Special attention is given to preventive care. The criteria are revised and developed continuously and the latest criteria are available at www.stm.fi.

Health care professionals are obliged by legislation to maintain and develop their professional skills (Act 559/1994). Continuing education for dentists is mainly delivered through the Finnish Dental Society Apollonia.

The first Finnish Patient Safety Strategy for 2009–2013 including oral health care, has been published in 2009. The aim of this strategy is to guide Finnish social and healthcare to adopt a uniform patient safety culture and to promote its implementation. (Promoting patient safety together. Helsinki 2009. 24 pp. Publications of the Ministry of Social Affairs and Health, Finland 2009:5)

Monitoring quality

Although the state authorities provide recommendations for dentists, the standards of dental care are not actively monitored in practice in Finland. Random checks on billing are done by KELA. They assess whether the charges announced for reimbursement reflect the treatment given.

Patient complaints are generally managed by the National Supervision Authority for Welfare and Health or the Consumer Complaints Board, supplemented by a patient ombudsman system. Also, since the Patient Injury Act in 1987 there has been a Patient Insurance Centre which may indemnify injuries which occur during treatment. The authorities monitor the quality and function of x-ray equipments by means of sample x-rays.

The SUHAT-health centres (health centres participating in oral health care challenges-network coordinated by National Institute for Health and Welfare) comprising of a 3.0 million inhabitants, have been developing a common bank of oral health indicators in order to compare organizations and to improve quality. The indicator bank includes data on acute visits, check up visits, orthodontic visits, oral health status indicators, number of visits (dentist, oral hygienists, dental nurses separately), number and treatments provided for the patients, data on cost and financing etc.

A patient satisfaction survey was carried out in big cities in 2009 (n=5197) and in the future the goal is that this questionnaire survey will be repeated every two years with more cities participating.

Tools: guidelines and recommendations

The Current Care (Käypä hoito) project is geared towards drafting nationwide care guidelines to improve the quality of care and reduce variations in care practices. The concise and readily comprehensible care guidelines help physicians and dentists in their clinical practice and serve as the basis for drafting regional treatment chains. So far, five current care guidelines on oral health have been published on oral cancer, third molar, temporomandibular disorders (TMD), dental caries and periodontal diseases (prevention, early diagnosis and treatment). These are available at www.kaypahoito.fi.

Iceland

HELGA ÁGÚSTSDÓTTIR

Legislation and standards for quality work in oral health

The Ministry of Health issued a general policy for quality work in health care in the year 2007. A directive on the selection and use of quality indicators in the health service was set in the year 2008 (Rg. 1148/2008).

Monitoring quality

Quality of care is monitored by the Chief Medical Officer, mostly through patient complaints. There is also a basic statistical analysis of the patterns of treatment provided by each dentist, and any practitioner whose profile differs substantially from the norm may be questioned by the Icelandic Health Insurance.

For most minor issues the agency will issue a warning to the dentist; more serious cases are referred to a liaison committee where both the agency and the dental association have their representatives.

Tools: guidelines and recommendations

In 2003 a work-group was formed to develop national evidence-based guidelines for dentistry. The group focused on caries. The guidelines were published in the year 2005 and are available, in Icelandic, at the website of the Directorate of Health. <http://landlaeknir.is/pages/167?query=>.

Norway

MAREN MATHIESEN WILBERG, LILJAN SMITH AANDAHL, TURID ALBUM ALSTAD, TRINE ORTEN GROVEN, LISE LUND HÅHEIM

Legislation and standards for quality work in oral health

The Ministry of Health and Care Services (Helse- og omsorgsdepartementet) has the overall responsibility for government policy on health and care services in Norway. The Directorate of Health (Helsedirektoratet) is a specialist directorate and an administrative body under the Ministry of Health and Care Services and the Ministry of Labour and Social Inclusion. The Directorate is administered by the Ministry of Health and Care Services. The Directorate of Health shall improve

the whole population's social security and health through comprehensive and targeted efforts across services, sectors and administrative levels. Standards in dental practice are governed by three different types of supervision. The Norwegian Board of Health Supervision (Helsetilsynet) is responsible for monitoring the field of dental care. The monitoring is carried out by the Chief Medical Officer (Fylkeslege) in each of the 19 counties. They normally use designated dentists to supervise and assess the dental medical standards, quality assurance programs etc.

Monitoring quality

The Ministry of Health and Care Services has approved eleven quality indicators for the dental care. These are now being implemented. The eleven quality indicators are:

1. Proportion of examined persons in each age group during a period of three years
2. If the PDS has collaboration with the care services in the county
3. If the PDS has a system for user surveys amongst the patients they offer dental treatment to
4. Proportion of 2-year old children that are examined in a child health clinic (this is a public primary prevention clinic established in every municipality)
5. Proportion of 2-year old children that are referred to a dental clinic from a child health clinic.
6. Significant caries index on 12-year olds (SiC-index)
7. Proportion of 18-year olds that are caries-free (DMFT = 0)
8. Proportion of 18-year olds that has a lot of caries (DMFT > 9)
9. Number of inhabitants per dentist
10. Number of inhabitants per dental hygienist
11. Number of dental specialists.

Tools: Guidelines, recommendations

A national clinical guideline for the use of dental filling materials was introduced by the Norwegian Directorate of Health in July 2003 (publication number: IS-1136. January 1st 2008). Amalgam was forbidden, due to regulations implemented by the Ministry of Environment.

The guideline "[Nasjonale retningslinjer for utredning og behandling ved mistanke om bivirkninger fra odontologiske biomaterialer](#)" (2008). Publication number: IS-

1481. In English: Guidelines for examination and treatment when side effects caused by dental materials are suspected.

The guideline ”*Tenner for livet – Helsefremmende og forebyggende arbeid*” (1999). Publication number: IK-2659. In English: Guidelines for the dental care to work for health promotion and to prevent disease. Norwegian health authorities recommend that the interval between oral examinations is determined by individual evaluation of the patient’s risk of oral diseases, with an 18 month examination interval as the norm.

The guideline ”*Og bedre skal det bli!*” (2007). Publication number: IS-1162. This is a National strategy for improving the quality work in social- and health care services. The guidelines can be downloaded from: <http://www.helsedirektoratet.no/tannhelse/publikasjoner>.

Sweden

ANDREAS CEDERLUND, MARIANNE APPELQUIST, MARIANA NÄSLUND-BLIXT

Legislation and standards for quality work in oral health

The Swedish National Board of Health and Welfare has developed **provisions** based on legislation about management systems for quality and patient safety in health care. To help interpret this provision the National Board has published a handbook about Good care.

Monitoring quality

In order to monitor quality in dental care The National Board of Health and Welfare has been given commission from the government to develop quality indicators for dentistry. The aim of the national quality indicator project is 1. Develop a set of comprehensive national indicators that reflects the six dimensions of Good oral health care and 2. Develop indicators within the National Guidelines (see below). Good oral health care is defined as: Evidence-based, Safe, Patient centred, Efficient, Equitable and Timely. The indicators will be published at the end of 2010.

The National Board has also been given commission to develop and maintain a dental health register for adults. This register contains data about the number of present and intact teeth for all adult people that have used their dental care voucher. The register also contains data about diagnoses, treatments, age, gender and residences for all people that use the dental insurance system.

In addition to the Dental health register two national quality registers are under development, the Swedish register for caries and periodontology (SKaPa) and the Swedish dental implant register (SDIR). A national quality register contains individualised data concerning patient problems, interventions, and outcomes after treatment. The two registers are partially funded by the National Board of Health and Welfare.

Guidelines and recommendations

In 2007, The National Board of Health and Welfare was given a commission by the Government to develop national evidence-based guidelines for dentistry. The guidelines shall be comprehensive for dentistry for adults and cover six subject areas, dental caries, periodontics, endodontics, prosthodontics, orthodontics and oral physiology. An area that deals with health promoting methods will also be included. The guidelines will be completed at the end of 2010.

The Swedish resource centre for dental materials, a unit within the National Board of Health and Welfare, publishes knowledge overviews and summaries on the properties and the proper handling of dental materials. In total 38 knowledge overviews have been published.

The Swedish Council on Health Technology Assessment (SBU) as the mandate of the Swedish Government to comprehensively assess healthcare technology from medical, economic, ethical, and social standpoints. SBU has published systematic overviews on dental caries, periodontics, orthodontics and methods of treating chronic pain. In 2010 SBU will publish reports on endodontics and prostodontics.

CHAPTER 2

Guiding principles in selecting the Nordic quality indicators for oral health care

The main objective of this project was to prepare a proposal and develop common Nordic quality indicators for oral health care.

According to the European Community Health Indicators (ECHI) recommendations the indicators set should be

1. Coherent in the sense of conceptual consistency
2. Respond to oral health policy priorities.
3. Indicators should be scientifically valid, reliable and relevant.

A starting point for this project was the OECD Health Care Quality Indicators project and the framework developed by the project. The framework highlights that the goal of health (care) systems is to improve the health status of the population. Many factors influence the health status of the population, including those falling outside health care systems, such as the social, economic and physical environment in which people live, and individual lifestyle and behavioural factors. The performance of health care systems also contributes to the health status of the population (Health at a Glance: OECD Indicators, 2009). In the latest OECD report (2009) the following oral health indicators were included: dental health among children, number of dentists and inequalities in dentist consultation, and these indicators were also taken into consideration in the selection process.

The results of the European Global Oral Health Indicators Development Project (EGOHID) were also used in this project. The selected essential oral health indicators by the EGOHID project are documented in the report: "Health Surveillance in Europe. A Selection of Essential Oral Health Indicators" 2005 Catalogue (www.egohid.eu).

The indicators create the basis for quality improvement and prioritization in the health care system (Mainz 2003). We divided the selected indicator set to structural, process, outcome and potential indicators and the indicators are described in these categories.

According to the OECD recommendations each indicator description includes the following fields:

1. Title
2. Importance of the indicator
3. Scientific soundness of the indicator
4. Findings
5. Definition and deviations.

Figure 1 illustrates how the selected Nordic quality indicators for oral health are coherent with the OECD conceptual framework.

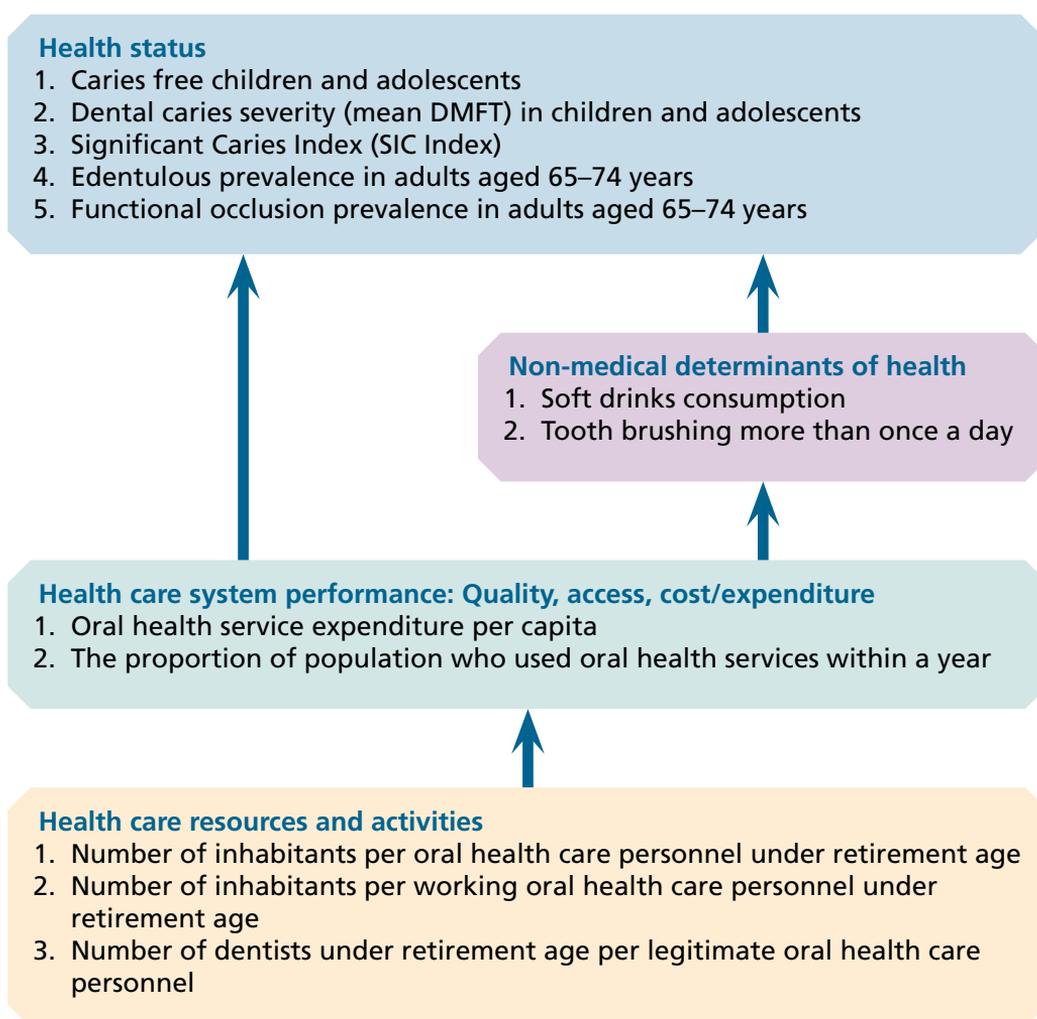


Figure 1. The selected Nordic quality indicators of oral health and coherence with the OECD conceptual frame work.

Structure indicators

Oral health workforce

1. Number of inhabitants per oral health care personnel under retirement age
2. Number of inhabitants per active oral health care personnel under retirement age
3. Number of dentists under retirement age per legitimate oral health care personnel

Importance of the indicator

The structure of health care systems is considered as key element of effective management and essential for attainment of health system goals: improving health, responding to the legitimate expectation of the population and fairness of the contribution. Especially the numbers of active workforce need to be monitored. It is important to have regulatory systems to ensure that the oral health workforce of the future is prepared to meet the changes that may take place in health care delivery.

Scientific soundness of the indicator

The overall aim of work force planning is the provision of an adequate number of personnel with appropriate competencies to meet the service needs of the population and to ensure that personnel are available and distributed equitably and coherently between geographical regions, establishments, and levels of care (primary, secondary and tertiary) (WHO, 2000).

Findings

The number of inhabitants per licensed dentists under retirement age and number of inhabitants per licensed oral hygienists under retirement age are presented in Figure 2. The information about the licensed oral health workforce is available from registers but there is a need to have more information about the active workforce. For example in Sweden there is a big difference between the ratios of population per licensed dentists (838) and the ratios of population per active dentists (1 234) since many licensed dentists are working abroad. There are considerable differences in the ratio of licensed dentists per licensed specialist; in Denmark it was 24.0 and in Finland 6.3. These differences are mainly due to the different number of recognized specialities in the Nordic countries.

Definition and deviations

- 1 Number of inhabitants per oral health care personnel under retirement age:
 - 1.1 Number of inhabitants/ licensed dentists
 - 1.2 Number of inhabitants/ licensed oral hygienists
 - 1.3 Number of inhabitants/ licensed specialist
 - 1.3.1.1 Number of inhabitants/ licensed orthodontists
 - 1.3.1.2 Number of inhabitants/ licensed oral surgeons

- 2 Number of inhabitants per working oral health care personnel under retirement age:
 - 2.1 Number of inhabitants/ active dentists
 - 2.2 Number of inhabitants/ active oral hygienists
 - 2.3 Number of inhabitants/ active specialists
 - 2.3.1.1 Number of inhabitants/ active orthodontists
 - 2.3.1.2 Number of inhabitants/ active oral surgeons

- 3 Number of dentists under retirement age per legitimate oral health care personnel:
 - 3.1 Number of licensed dentists / licensed oral hygienists
 - 3.2 Number of licensed dentists / licensed specialist
 - 3.3 Number of active dentists / active oral hygienists
 - 3.4 Number of active dentists / active specialists

Licensed Dentist: A person who has completed studies in dentistry at the university level and who is legally licensed for practice independent of medicine (WHO, 2000).

Active dentist: licensed dentist who is actually practicing.

Oral Hygienist: A person who has completed a programme of basic hygienist education and is qualified and authorized in his/her country to practice hygienist in all settings for the promotion of health, prevention of illness, care of the sick and rehabilitation (WHO, 2000).

Active oral hygienists: Licensed oral hygienist who is actually working.

There may be differences in the workforce indicators because of different retirement ages in each country. The different inclusion criteria are presented in footnotes in annex 2. For Finland the findings for active dentists are an estimate of the public dentists and private dentists as main occupation. The number of recognised specialties varies from two (orthodontics, oral surgery) in Denmark to eight in Sweden and therefore the ratios of population per specialists or

dentists per specialists are not comparable. However, we can compare the rations of population per orthodontists or oral surgeons.

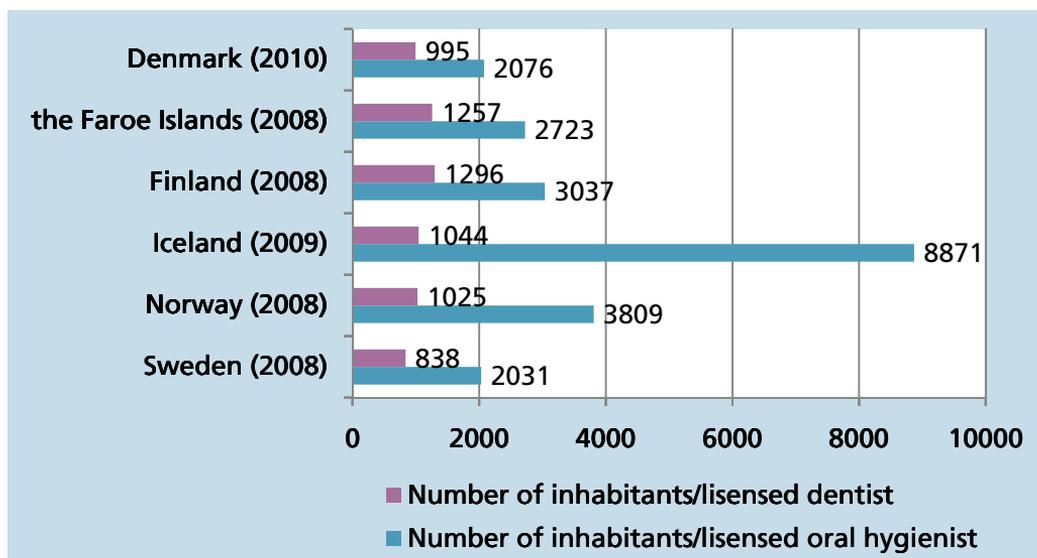


Figure 2. Number of inhabitants/licensed dentists under retirement age and number of inhabitants/ licensed oral hygienists under retirement age

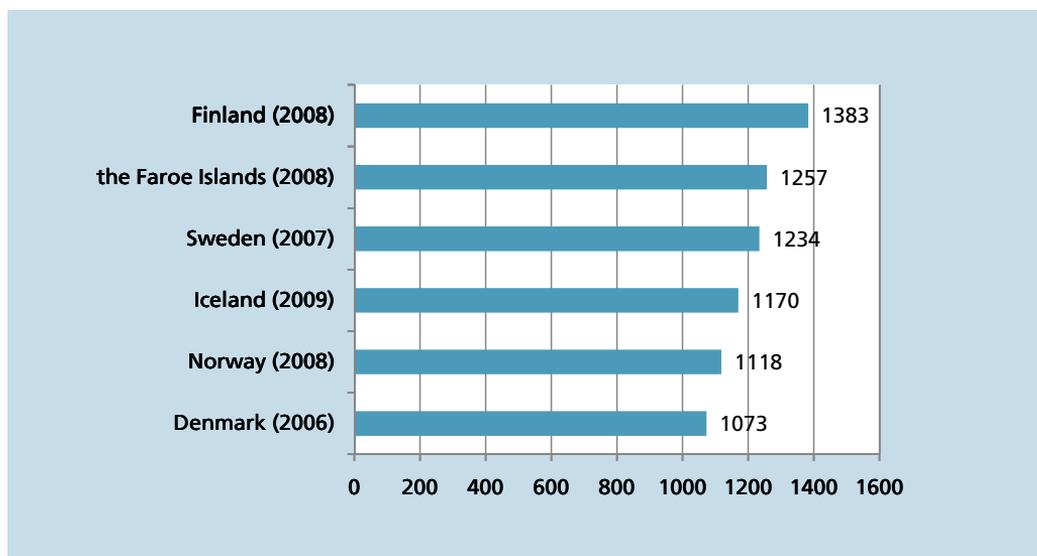


Figure 3. Number of inhabitants/active dentists under retirement age

Oral health service expenditure per capita

Importance of the indicator

Differences in health expenditure per capita reflect a wide array of market and social factors, as well as countries' diverse financing and organizational structures of their health systems.

Scientific soundness of the indicator

This indicator can be used in comparative analysis of health systems. As an economic indicator, it informs about different approaches to the organization, financing and delivery of health services and the role of the main actors in health systems. It also provides information on the cost of oral health services, describes the institutional framework and the process, content and implementation of health care reform programs (WHO, 1998).

Findings

The total oral health service expenditure per capita was between EUR 217 (Denmark, 2005) and EUR 269 (Iceland, 2008) with the exception of Finland, where the total expenditure per capita in 2007 was as low as EUR 133. In oral health care the labour costs are the main expenditure. In Finland the number of dentists has been decreasing and it is the lowest when comparing with the other Nordic countries and this may result in lower labour costs.

In the total cost of public dental service (PDS) per capita, the differences are smaller; the highest cost was in Denmark EUR 84 (2005) and lowest in Iceland EUR 49 (2008).

Definition and deviations

The indicator is defined as total expenditure – public and private – of oral health services per year per capita.

Total expenditure on oral health measures the final consumption of health goods and services (*i.e.* current health expenditure) plus capital investment in oral health care infrastructure. This includes spending by both public and private sources on oral health services and goods, public health and prevention programmes and administration.

Countries' health expenditures are converted to a common currency (Euros).

For Finland the expenditure of hospital dental clinics is missing from the total oral health service expenditure per capita.

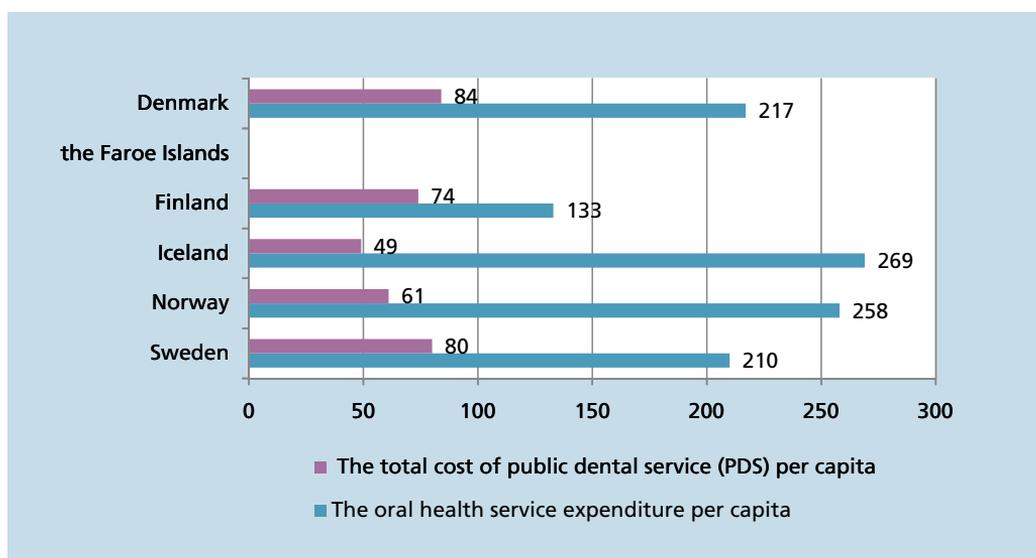


Figure 4. The total cost of public dental service (PDS) per capita and the total oral health service expenditure per capita in euros

Process indicators

The proportion of population who used oral health services within a year

Importance of the indicator

This indicator describes the visiting pattern and use of oral health care services during a calendar year. Visiting pattern is culture bonded and varies between the countries. The indicator can be used in comparing the oral health care resources between the Nordic countries. At the present the goal is not that everyone should visit a dentist yearly but according to individual need. Because data on the proportion of population who used oral health services within a year is available for almost all Nordic countries this was chosen as indicator. In the future it is important to develop the statistics in each country so that data on the use of oral health care services during a longer time period could be easily available.

Scientific soundness of the indicator

This indicator is based on register data and interview surveys in the Nordic countries.

Findings

Five countries (Denmark, the Faroe Islands, Finland, Iceland and Norway) are able to report the proportion of population under 18/19/20 year-old who used oral health services within a year and the figures varied from 61% in Iceland to 77% in Finland and Denmark. For adult populations the data was available for Denmark (64%), Finland (50%), Norway (76%) and Sweden (56%) (Figure 5).

Definition and deviations

The indicator is presented as the proportion of population (children and adolescents under 18/19/20 year-old and adults aged 18/19/20 years and older separately) who visited the oral health services within a year. Denmark gives an estimate of the number of children and adolescents based on the number of 5,7,12 and 15-years who were registered in the Oral Health Register (SCOR) in 2009. For adults the figure is the number of adults who received subsidized oral health care in 2009. For the Faroe Islands the figure is for children and adolescents under 16-year-olds. The findings for Finland (age groups 0-18 year-olds and adults) are gathered for private sector from KELA, The Social Insurance Institution of Finland and for public sector from official national statistics (National Institute for Health and Welfare, THL). In Finland there might be a certain overlapping in the statistics. The information on the use of oral health services for children 0-18 year-olds in Iceland comes from the National Insurance System (Sjúkratryggingar Íslands). Norway provides data for adults aged 21 or older, and this information comes from household surveys. For children and adolescents the data comes from Municipality-State-Reporting (KOSTRA) and the age group is 3-18-year-olds. From Sweden the data is register data and includes persons aged 20 years or older. Differing survey questions and response categories may affect the ability to make valid cross-national comparisons.

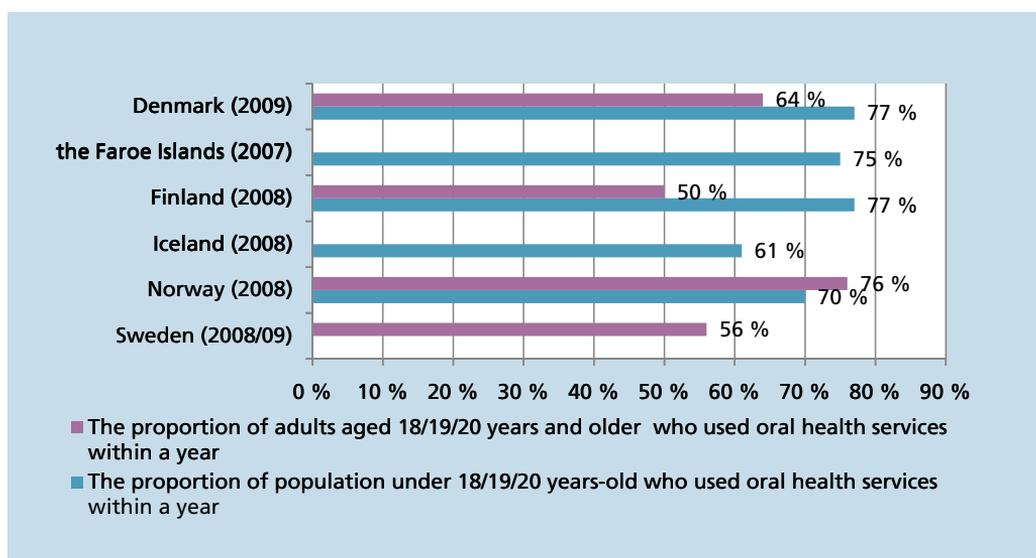


Figure 5. The proportion of population under 18/19/20 years-old and the proportion of adults aged 18/19/20 years and older separately who visited oral health services within a year

Health behaviour in school-aged children

1. Daily tooth brushing (more than once a day)

For all countries except the Faroe Islands the information comes from WHO Health behaviour in school-aged children (HBSC) study from 2005/2006. For the Faroe Islands data is obtained from a more recent (2009) self-administrative questionnaire study.

Importance of the indicator

The two main dental diseases – caries and periodontal disease – can be considered as behavioural diseases that can be effectively prevented by good oral hygiene and by restricting the frequency and amount of sugar consumption.

Perceived cleanliness and hygiene are important motivators for regular tooth brushing (Macgregor IDM et al., 1997). Tooth brushing has been associated with self-esteem and the extent to which adolescents feel they have control over their own health (McGrath C and Bedi R, 2000).

Previous results from the HBSC study have found that regular tooth brushing is more frequent among girls, adolescents from more affluent families and those with parents with higher-level occupations (Maes L et al., 2006).

Scientific soundness of the indicator

Tooth brushing is considered to be an important method for maintaining gum health and controlling plaque formation, particularly when combined with fluoride toothpaste. The universally recommended frequency for tooth brushing is twice a day (Löe H, 2000).

Findings

There are large variations across the Nordic countries in the proportion in all three age groups (11-, 13-, 15-year-olds) who report tooth brushing more than once a day. Rates of tooth brushing more than once a day are consistently higher among girls than boys across all three age groups. The lowest figures in all age groups are for Finnish boys, less than 40% of them brush their teeth more than once a day.

Definition and deviations

Young people were asked how often they brushed their teeth. Response options ranged from “never” to “more than once a day”. The findings presented here are the proportions that reported brushing their teeth more than once a day.

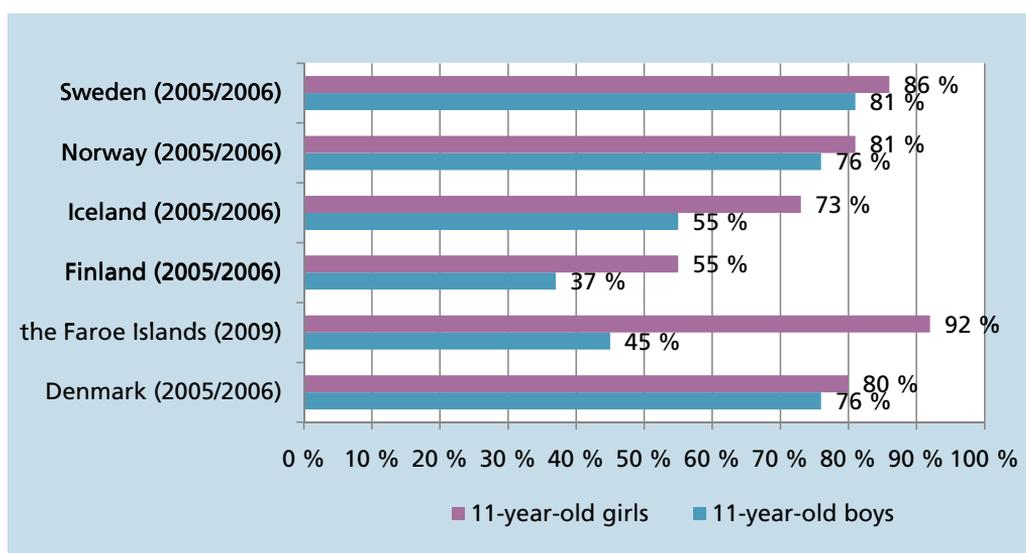


Figure 6. 11-year-old girls and boys who brush their teeth more than once a day

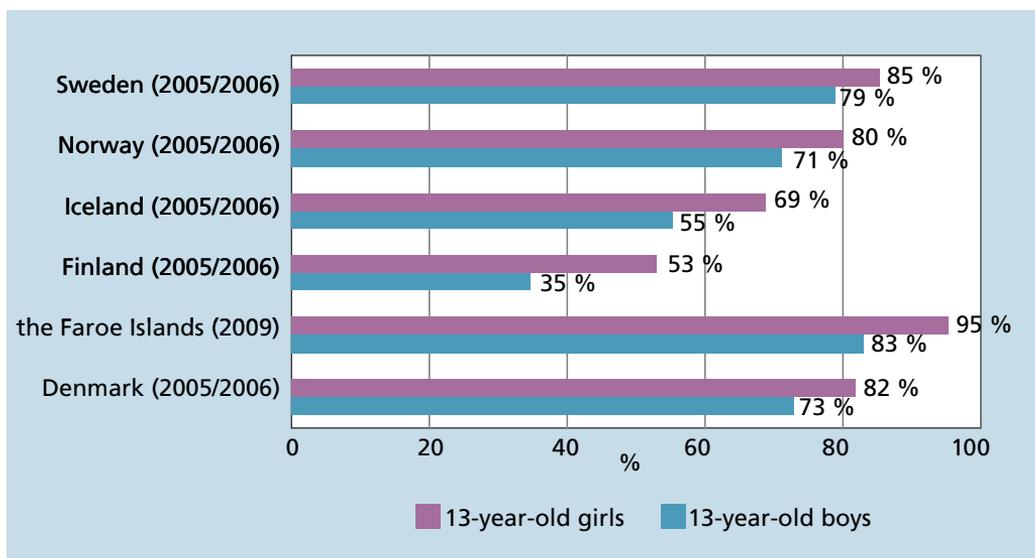


Figure 7. 13-year-old girls and boys who brush their teeth more than once a day

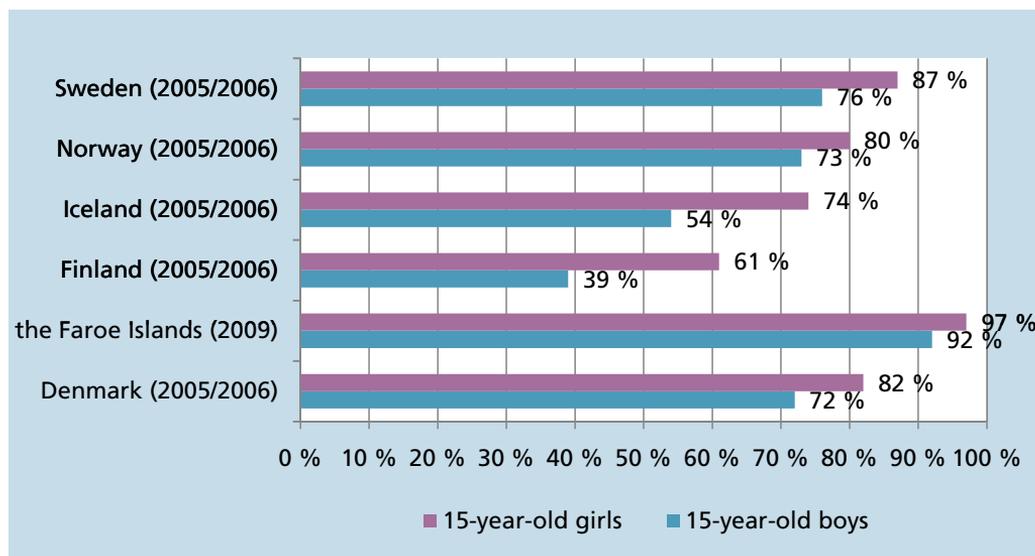


Figure 8. 15-year-old girls and boys who brush their teeth more than once a day

2. Consumption of non-diet soft drinks

For all countries except the Faroe Islands the information comes from WHO Health behaviour in school-aged children (HBSC) study from 2005/2006. For the Faroe Islands data is obtained from a more recent (2009) self-administrative questionnaire study.

Importance of the indicator

Consumption of non-diet soft drinks is an indicator of less-healthy food intake, primarily in the context of the increasing prevalence of overweight and obesity. Soft drinks are generally considered as “empty calories” that inhibit the intake of more nutritious foods, posing serious challenges to adolescent compliance with current dietary guidelines (Guenther PM, 1986; Harnack L, 1999).

Scientific soundness of the indicator

Consumption of soft drinks and other sugars has been associated with an elevated risk of poor oral health in adolescence, particularly caries and dental erosion, and this relationship is cumulative (Sheiman A, 2001; Touger-Decker R and van Loveren C, 2003; Tahmassebi JF et al., 2006).

Findings

There is a general tendency (more so in boys) for soft drinks consumption to increase between ages 11 and 15. Soft drinks consumption is higher among boys than girls, especially among 15-year-olds. Consumption varied for 15-year-old girls from 4% (Finland) to 14% (the Faroe Islands and Norway) and for 15-year-old boys from 9% (Finland) to 35% (the Faroe Islands).

Definition and deviations

Young people (11-, 13- and 15-year- olds) were asked how often they consume soft drinks. Soft drinks were defined as “Coke or other soft drinks that contain sugar”. Response options ranged from “never” to “more than once a day”. The findings presented are the proportions that reported drinking soft drinks every day or more than once a day.

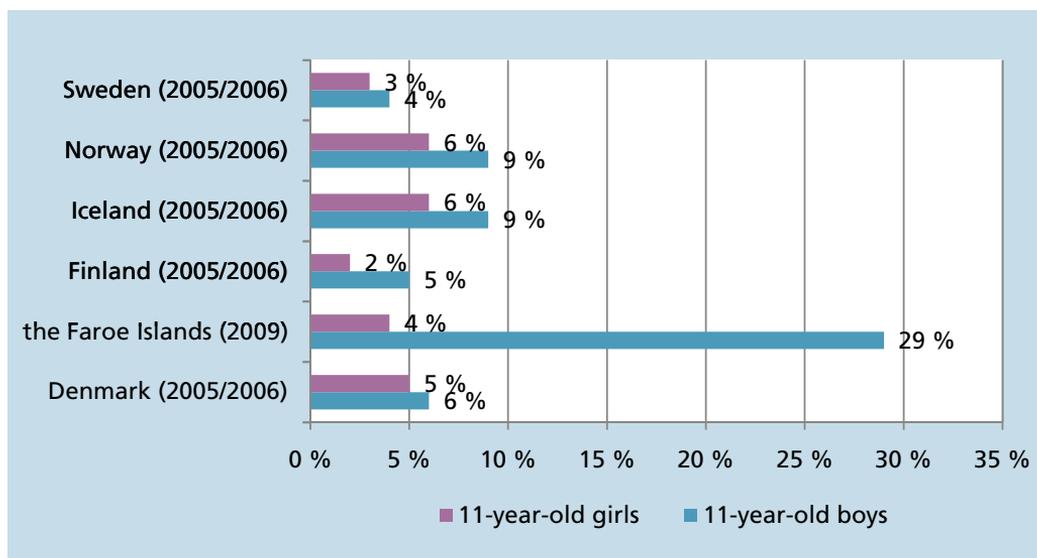


Figure 9. 11-year-old girls and boys who drink soft drinks daily

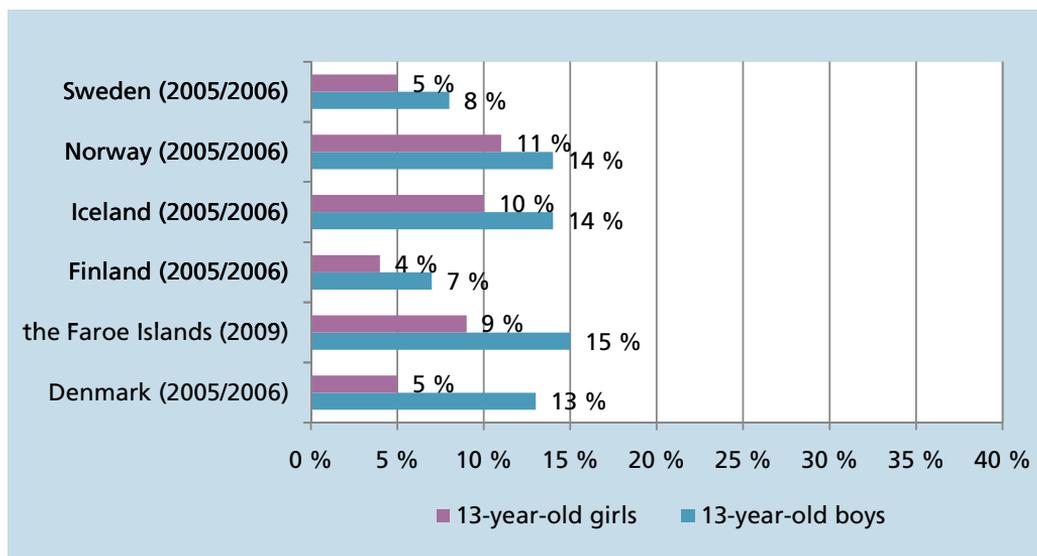


Figure 10. 13-year-old girls and boys who drink soft drinks daily

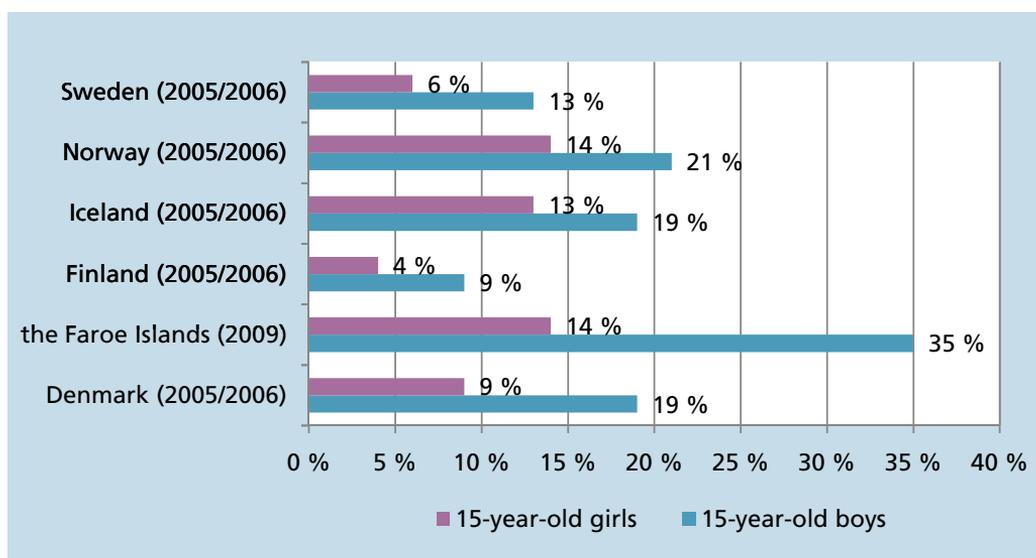


Figure 11. 15-year-old girls and boys who drink soft drinks daily

Outcome indicators

Caries free children and adolescents

Importance of the indicator

Information about caries free children and adolescents is good basis for planning and for comparing the development of oral health status on a regional, national and international level. This indicator is commonly used to assess overall levels of oral health and to monitor trends in oral health over time among populations of children and adolescents.

Scientific soundness of the indicator

This indicator has been widely used measuring the proportion of a population with a value of 0 for dentine decay (caries) assessed using the Decayed Missing and Filled Teeth (DMFT) *index at the dentine only caries – D₃ level*, as recommended by the WHO Basic Methods (WHO ,1997).

Findings

Over the past four decades there has been a common improvement in oral health of the population in Nordic countries, the percentage of caries-free children has risen in all Nordic countries. The proportion of 12-years-old caries-free children varied from 34% in Iceland (2005) to 69% in Denmark (2009). (Figure 4)

Definition and deviations

The indicator is defined as the proportion of examined children and adolescents in selected index age groups with no obvious decay experience.

No obvious decay experience: ($D_3MFT = 0/d_3mft = 0$).

No obvious decay. Decay into dentine = $0/d = 0$.

Enamel caries lesions are not included.

There is a need to adhere to the specific caries criteria and conventions in the WHO Basic Methods (and where appropriate the ICDAS Advanced Methods). This is because practical experience in national studies has shown that seemingly small changes in criteria can have a significant impact on the measured values for this indicator, particularly when defining the cut-off to determine when dentine decay is or is not scored by an examiner. Differences between the countries may be due to different practice in use of radiographs.

Nordic countries collect this data for different age groups. Many Nordic countries are able to present recent data from 2009 or 2008 (Denmark, Norway, Sweden) but for Finland the data derives from 2003. Sweden does not register missing teeth (m/M). The information from Iceland comes from a national Oral Health Survey in 2005, conducted under a strict research protocol using the ICDAS criteria and radiographs.

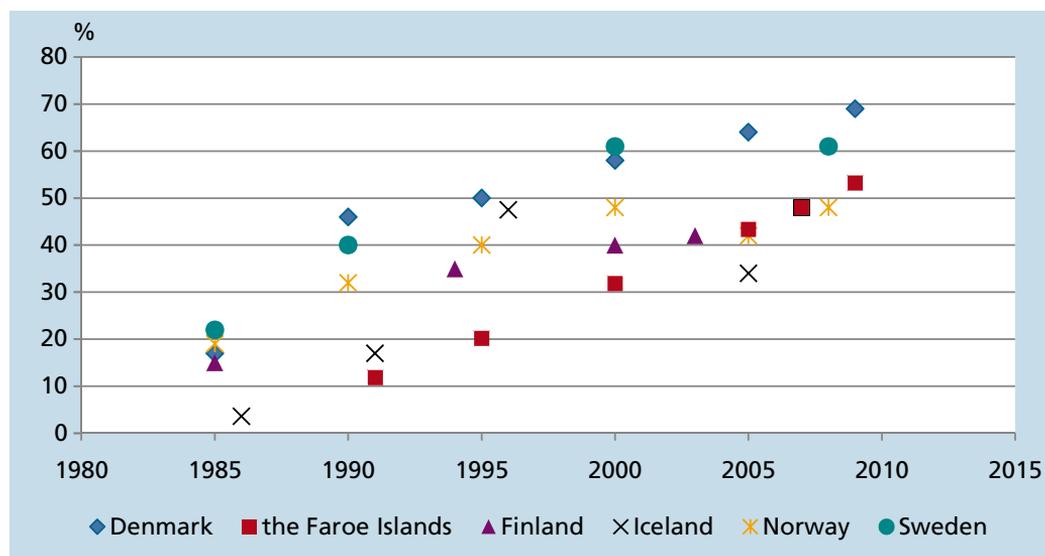


Figure 12. Proportion of caries free (no dentine caries) 12-year-old children in Nordic countries, 1980–2010

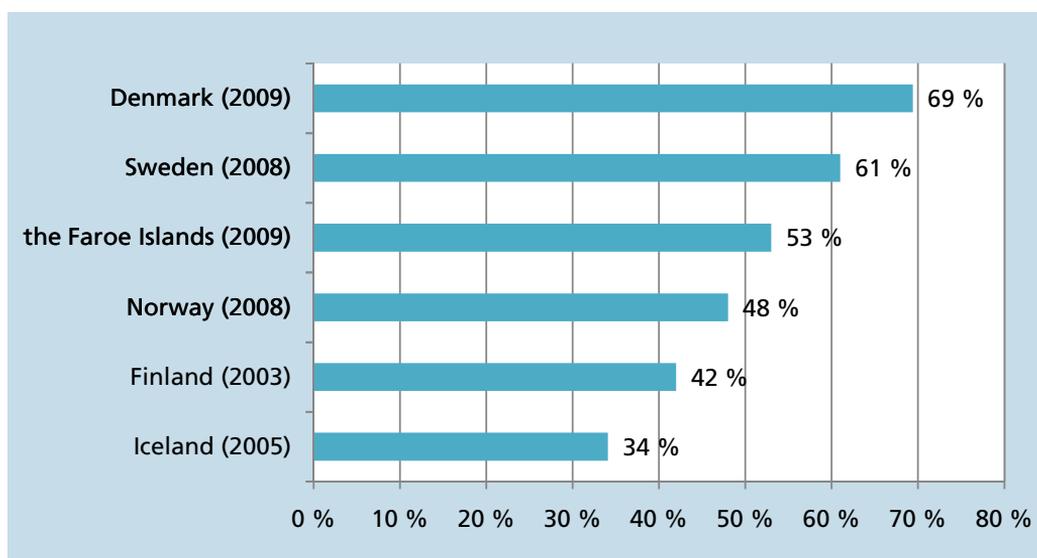


Figure 13. Proportion of caries free (no dentine caries) 12-year-old children

Dental caries severity (mean DMFT) in children and adolescents

Importance of the indicator

Decay experience at early and/or later stages of severity assessed by variations of the severity of caries index is accepted globally as a standardised measure of one of the most common oral diseases. Oral health care for children and adolescents is characterised by strong aspect of preventive care. The focus of public health planning embraces evidence based health care, has moved away from providing only restorative interventions (fillings), and has moved towards the delivery and evaluation of preventive programmes and services. Indicators are needed which can be used to document the need for and the degree of success achieved in controlling early stage decay through prevention, and the need for and the pattern of restorative care which is provided for decay which has progressed to the more severe stages of the disease process.

This indicator can be used to assess mean levels of dental caries at diagnostic thresholds appropriate to assessing both preventive and operative dental treatment and to monitor trends in oral health over time among populations or its sub-groups via oral health surveys.

It may be used in either the permanent or the primary teeth as an aggregate measure, or can be reported separately by its individual components.

Source: “Health Surveillance in Europe. A Selection of Essential Oral Health Indicators” 2005 Catalogue (www.egohid.eu)

Scientific soundness of the indicator

The DMFT index is recommended by the WHO (WHO, 1997). Using the DMFT index, oral health data from clinical visual examinations of the teeth have been collated reliably and reproducibly for many years. In Europe data has also been collected at the early stage of decay using the ICDAS Method (the *enamel and dentine caries– D 1 level*) (Pitts NB, 2004).

Findings

During the past decades the substantial falls in the DMFT index across Nordic countries are presented in figure 5. The mean national D_3 MFT scores for 12-year olds were low in all Nordic countries. There are, however, notable differences between the Nordic countries; the lowest D_3 MFT (0.6) was in Denmark (2009) and highest in Iceland (2.1 in 2005). World Health Organization has set a target for Europe of no more than 1.5 D_3 MFT by the year 2020 for 12-year olds (WHO, 1999).

Definition and deviations

Mean number of decayed, missing and filled primary or permanent teeth present per person in selected index age group in children and adolescents.

In this index decay is assessed for each individual using a count of the number of Decayed Missing and Filled Teeth (DMFT).

Capital letters are used for the permanent dentition and lower case dmft are used for decayed, missing and filled primary teeth.

Decay experience data recorded at the *dentine only caries* threshold should be reported with the subscript D_3 to differentiate them those including from earlier stages of disease (enamel caries).

Nordic countries report data for different age groups. For 12-year-olds (WHO index age group), however, data exists for all Nordic countries. Finland, Denmark, Norway collect this data regularly from patient records. Iceland collects this information by surveys. Sweden does not include the M component. In the latest national survey in Iceland in 2005 the national mean D_3 MFT score for 12-year-olds was 1.4 using only the visual examination scores but the mean D_3 MFT score rose to 2.1 when radiographic data was included. The use of radiographs should be clearly stated as well as the coverage of data presented.

Year 1986 Iceland 6,6

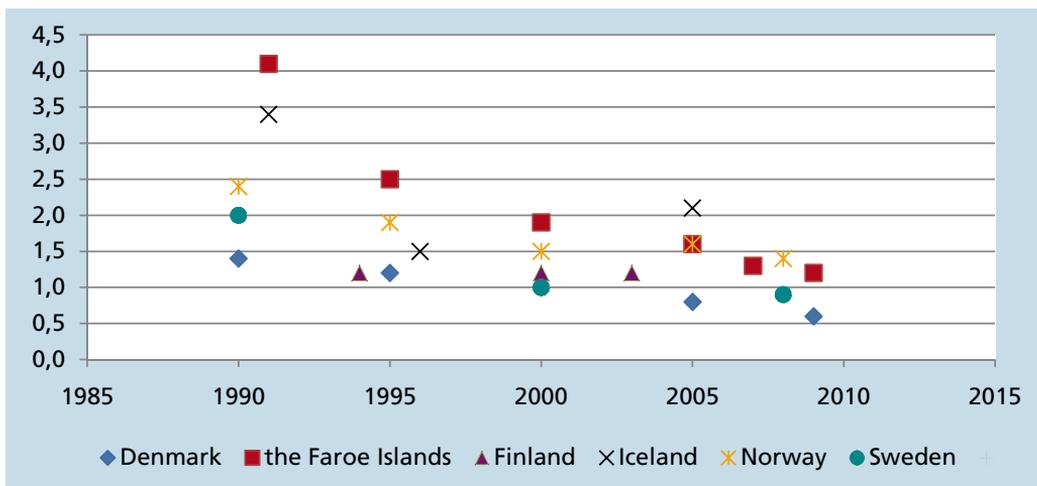


Figure 14. Changes in the average D₃MFT values in 12-year-olds

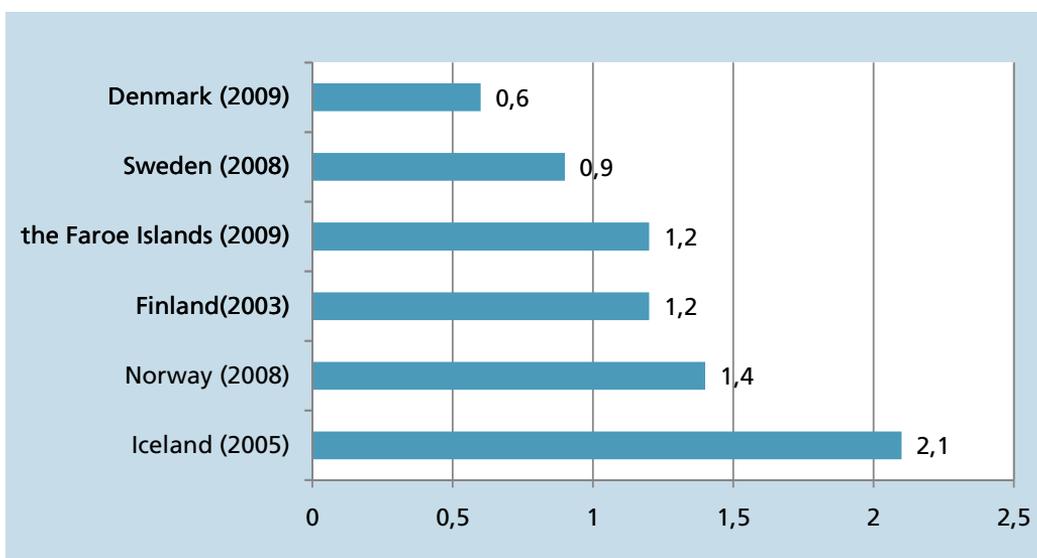


Figure 15. Average number of decayed, missing or filled teeth, 12-year-old children

Significant caries index

Importance of the indicator

A detailed analysis of the caries situation in many countries show that there is a skewed distribution of caries prevalence - meaning that a proportion of children still has high or even very high DMFT values even though a proportion is totally caries free. The mean DMFT value does not accurately reflect this skewed distribution leading to incorrect conclusion that the caries situation for the whole population is controlled, while in reality, several individuals still have caries (Brathall D, 2000). The *Significant Caries Index (SiC Index)* was introduced in order to bring attention to the individuals with the highest caries values in each population under investigation. Focusing attention to the children with highest caries scores with the SiC Index will lead to significant gains for the society and for the person concerned as more specific targeted preventive actions can be implemented. Obviously, children with high caries prevalence will most likely be those adults needing complex and expensive treatments in the future. Thus, the general concept is that first the country should reach the WHO goal of 3 or less DMFT for 12-year-old children. The next step is SiC Index of 3 DMFT should be achieved for the one third of the highest caries scores for 12-year-old children. When the SiC Index target is reached for the whole country, one should target provinces, districts, cities and even schools where caries levels are still high and the SiC Index is above 3 DMFT. This will strengthen the concept of “Health for All”.

Source: www.whocollab.od.mah.se.

Scientific soundness of the indicator

The SiC Index is an indicator that reflects the situation among the most caries-exposed individuals and could be included in future population-based oral health surveys together with the mean DMFT (Nishi M, 2002).

Findings

The SiC-index for Iceland was 4.7 (2005), for Denmark 1.9(2009), for Norway 3.5 (2009) and for Sweden 2.5 (2008) for 12-year-old children.

Definition and deviations

SiC Index is the mean DMFT of the one-third of a population with the highest caries values.

Sweden does not register missing teeth (M). Iceland is presenting data from a national Oral Health Survey in 2005, from Norway the data is register data.

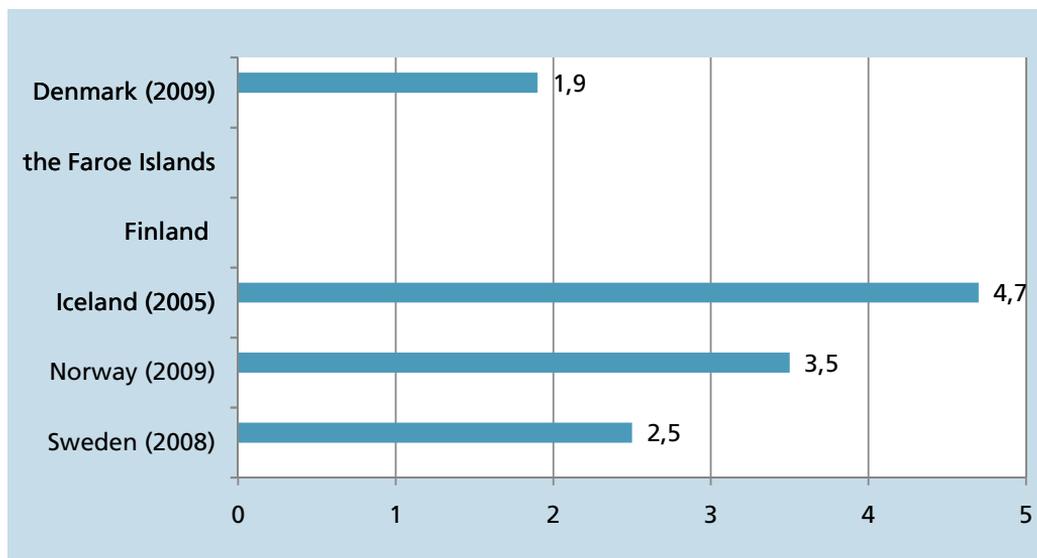


Figure 16. The SiC-index for 12-year-old children

Edentulous prevalence in adults aged 65–74 years

Importance of the indicator

Better oral hygiene, access to care, technical advances in oral health care and socioeconomic factors have resulted in more people retaining their natural teeth in later life. Loss of all natural teeth can contribute to psychological, social and physical impairment. Edentulous prevalence is a measure of past disease and an indicator of oral health.

Scientific soundness of the indicator

The edentulous prevalence index is recommended by the WHO (WHO, 1997) and reducing the number of edentulous persons is one of the WHO global goals for oral health for the year 2020. The use of age group 64–74 is recommended by the WHO

Findings

The percentage of edentulous (65–74-year-olds) varied from 7% in Norway (2008) to 36% in Finland (2000). In all Nordic countries edentulousness is decreasing rapidly.

Definition and deviations

Proportion of 65–74 year old adults who have lost all their natural teeth.

Edentulous: A condition characterised by not having any natural teeth.

Natural teeth: Includes teeth which erupted into the mouth and excludes artificial teeth, implants, dentures.

All Nordic countries are not able to report this data. The Finnish data is available from a national health examination survey. Denmark, Iceland and Norway collect self-reported data on edentulousness through interview surveys.

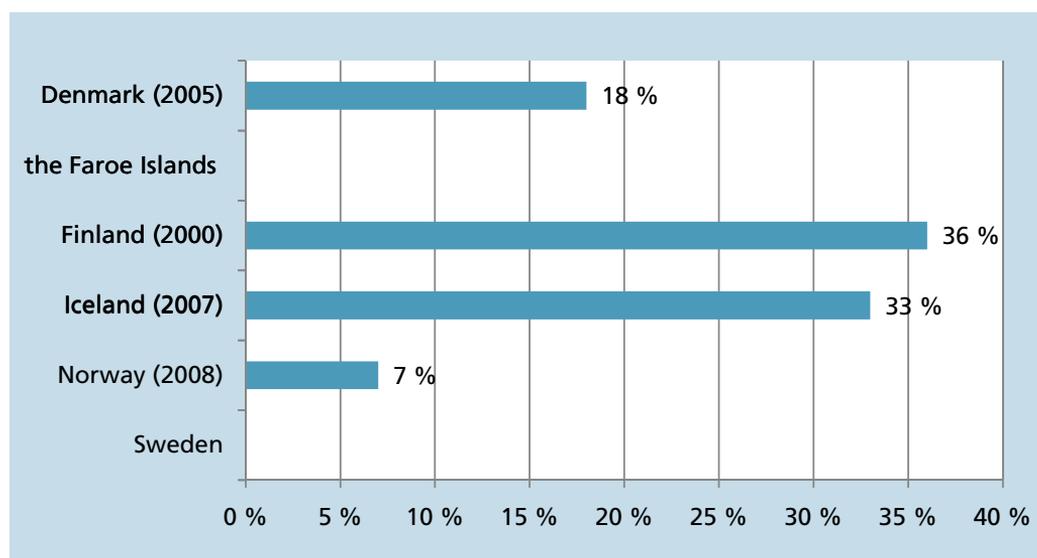


Figure 17. Proportion of edentulous in age group 65–74 in Nordic countries

Functional occlusion prevalence in adults aged 65–74 years

Importance of the indicator

Oral diseases affect the most basic human needs: the ability to eat and drink, swallow, maintain proper nutrition, smile, and communicate. Oral diseases affect not only the health of the oral cavity, but can be detrimental to the overall health and well-being of individuals. Vast improvements in tooth retention have taken place over the past three decades. There is evidence that people with impaired dentitions due to missing teeth must choose foods that do not provide optimal nutrition; in the elderly, poor oral health can lead to significant weight loss that can affect overall health. Early tooth loss has been shown to be a predictor of eventual edentulism. While continuing efforts to prevent tooth loss, there is a need to evaluate the appropriate replacement of tooth function. This indicator gives a broader perspective than indicators measuring the presence or absence of all teeth. It is an indicator to evaluate the progressive impact of preventive program to reduce the incidence and the severity of dental caries. Beside aesthetic consideration, it is a tool for planning current and future prosthetic needs for adults.

Source: “Health Surveillance in Europe. A Selection of Essential Oral Health Indicators” 2005 Catalogue (www.egohid.eu)

Scientific soundness of the indicator

Subsequent population based oral health studies have frequently referred to the presence of a minimum of 20 teeth or sometimes a certain number of contacting posterior pairs of teeth, as a simple way of defining “satisfactory” oral health (WHO, 1997).

Findings

The proportion of adults aged 65-74 years with 20 or more natural teeth was highest in Norway 66% (2008) and lowest in Iceland 33% (2007).

Definition and deviations

Proportion of adults aged 65-74 years with 20 or more natural teeth.

Permanent teeth refer to (usually) thirty-two adult teeth in a complete, permanent dentition. It comprises thirty-two teeth in the two dental arches: maxillary teeth and mandibular teeth.

Functional occlusion: The presence of 20 or more natural teeth has been used internationally as a marker for a functional dentition, or one which provides the ability to eat, speak, and socialise without active disease, discomfort, or embarrassment presence without the need for full or partial dentures.

Dentate: A condition characterised by having one or more natural teeth. A full dentition in adults is defined as the presence of all 28 natural teeth, not including third molars and teeth removed for orthodontic treatment.

All Nordic countries are not able to report this data. Norway and Denmark collects self-reported data through interview surveys. Findings from Iceland are for age group 65–79 from a questionnaire survey in 2007.

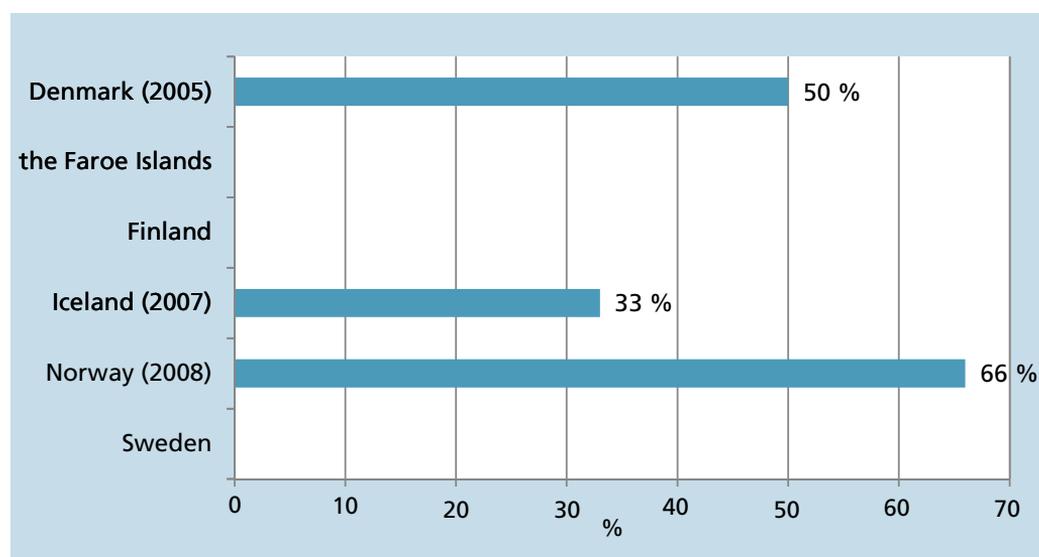


Figure 18. The proportion of adults aged 65–74 years with 20 or more natural teeth

Potential indicators

Regular dental contact

Importance of the indicator

This indicator serves many purposes and complements the indicator “The proportion of population who used oral health services within a year”. Over the past decades there has been a general improvement in the oral health of those

living in the Nordic countries. In most of the Nordic countries the children under 18 years are seen regularly in the Public Dental Service (PDS) and have individual recall intervals which often exceed one year. This indicator can be used to assess the proportion of population who regularly use oral health services.

This indicator can also be used to help planners to identify potential drop-outs of the oral health services.

Findings

Data was only available for this indicator from few countries but the indicator was considered important and the working group is proposing this indicator as a potential indicator and the Nordic countries are planning to provide comparable data in 2–3 years.

Definition and deviations

Proportion of population who visited the public health dentist/ public health dental clinic or the private dentist/ private dental clinic presented separately within the past two / three years.

Discrimination of dental contacts between individually based check-up intervals, yearly regular checking and only in case of pain or discomfort should be presented.

Self-assessed oral health status

Importance of the indicator

Many countries conduct regular health surveys which allow respondents to report on different aspects of their health. A commonly-asked question relates to self-perceived oral health status, of the type: “How is your oral health in general?”

Findings

Data was only available for this indicator from few countries but the indicator was considered important and the working group is proposing this indicator as a potential indicator and the Nordic countries are planning to provide comparable data in 2–3 years.

Definition and deviations

Perceived health status reflects people's overall perception of their health, and may reflect all physical and psychological dimensions. Typically, survey respondents are asked a question such as: "*How is your oral health in general? Very good, good, fair, poor, very poor*".

This indicator is defined as the proportion of adult population rating their oral health to be "good/very good" combined.

Caution is required in making cross-country comparisons of perceived health status. People's assessment of their health is subjective and can be affected by factors such as cultural background and national traits.

Oral disadvantage due to functional limitations

Importance of the indicator

Physical functioning together with social functioning is one of the dimensions of oral health related quality of life. Surveillance of oral disadvantage due to functional limitation has implications regarding the use of oral disadvantage to assess the long-term effectiveness of dental care. The incidence of oral disadvantage is substantial and consistent with the notion that oral health has a substantial impact on quality of life.

Findings

Data was only available for this indicator from few countries but the indicator was considered important and the working group is proposing this indicator as a potential indicator and the Nordic countries are planning to provide comparable data in 2–3 years.

Definition and deviations

Proportion of adult subjects who has experienced difficulties in eating and/ chewing because of problems with mouth, teeth or dentures of any grade in the past 12 months.

To collect this information every person in the study group should be asked "*Are you capable of chewing hard or tough food? Without difficulty, with difficulty or not at all.*"

This indicator is defined as the proportion of people rating their ability to chew to be "with difficulty/not at all" combined. This indicator reports the adults who have poor or very poor chewing ability.

CONCLUSIONS AND RECOMMENDATIONS

This was the first joint project for quality indicators for oral health care in the Nordic countries financed by the Nordic Council of Ministers. The working group settled on 12 indicators for oral health care on which data was available at least in three Nordic countries. Added to this the working group also proposed three potential quality indicators. Extensive work was done in defining the indicators and ensuring the quality of collected data. The basic register data can be used for comparisons and benchmarking by the participating countries, but still more work is needed to develop indicators more precisely connected to quality. The working group stated that all Nordic countries should work to obtain regularly data on the agreed indicators using the same methodology, e.g., identical definitions and comparable age groups. As a goal the working group proposes to reproduce data collection with this indicator set added with possible new quality indicators and a follow up data collection every 3–5 years.

In the OECD reports only basic data on oral health is covered and therefore the working group recognizes a need to link this work with the OECD Health Care Quality Indicators project work.

In the future, more quality indicators on oral health are needed and the working group stated the work should continue. The following fields were considered important to have indicators on: access to care, patient satisfaction, periodontal diseases and their effective treatment, implants, coverage of orthodontic treatment, success of root treatments, and the prevalence of erosion. Future indicators need to be developed for each of these fields.

References

- Bratthall D.(2000) Introducing the Significant Caries Index together with a proposal for a new oral health goal for 12-year-olds. *Int Dent J*. 50: 378–384.
- Guenther PM (1986). Beverages in the diets of American teenagers. *Journal of the American Dietetic Association*;86:493–499.
- Harnack L, Stang J, Story M (1999). Soft drink consumption among US children and adolescents: nutritional consequences. *Journal of the American Dietetic Association*;86:994-36.
- Health at a Glance (2009): OECD Indicators.
- Health Surveillance in Europe (2005). A selection of essential oral health indicators. www.egohid.eu.
- Löe H (2000). Oral hygiene in the prevention of caries and periodontal disease. *International Dentistry Journal*; 50:129–39.
- Macgregor IDM, Regis D, Balding JW (1997). Self-concept and dental health behaviors in adolescents. *Journal of Clinical Periodontology*; 24:335–339.
- Mainz J (2003). Defining and classifying clinical indicators for quality improvement. *International Journal for Quality in Health Care*;15(6):523–530.
- Maes L et al. (2006) Tooth brushing and social characteristics of families in 32 countries. *International Dental Journal*; 56:159–67.
- McGrath C, Bedi R (2000). Gender variation in the social impact of oral health. *Journal of the Irish Dental Association*; 46:87–91
- Nishi M et al. (2002) Caries experience of some countries and areas expressed by the Significant Caries Index. *Community Dent Oral Epidemiol* 30:296–301.
- Pitts NB (2004). "ICDAS"– an international system for caries detection and assessment being developed to facilitate caries epidemiology, research and appropriate clinical management. *Community Dental Health* 21:193–198.
- Sheiham A (2001). Dietary effects on dental diseases. *Public Health Nutrition*;4:569–591.
- Tahmassebi JF et al.(2006) Soft drinks and dental health: a review of the current literature. *Journal of Dentistry*; 34(1):2–11.
- Touger-Decker R, van Loveren C (2003). Sugars and dental caries. *American Journal of Clinical Nutrition*; 78:881S–892S.
- WHO (2003). The World Oral Health Report 2003. Continuous improvement of oral health in the 21st century – the approach of the WHO Global Oral Health Programme. Genève: WHO.
- WHO (2000). "What resources are needed?" i World Health Report 2000. Health Systems: Improving Performance, kapitel 4, sidorna 73–92. Genève: WHO.
- WHO:s regionkontor för Europa (1998). Terminology – A glossary of technical terms on the economics and finance of health services. Köpenhamn: WHO:s regionkontor för Europa.
- WHO (1997). Oral health surveys, Basic Methods (4th ed.) Genève: WHO.

Annex 1. Basic information

Number of	Denmark 2010	The Faroe Islands 2010	Finland 2008	Iceland 2009	Norway 2008	Sweden 2008
Inhabitants	5 534 738	48 650	5 326 109	319 368	4 799 252	9 256 347
Licensed dentists	5 559	45	4 110	306	5 927	11 044
Licensed oral hygienists	2 068	17	1 754	36	1 308	4 558
Licensed specialists	229	2	653	45	587	1 063
Licensed orthodontists	168	1	167	13	253	315
Licensed oral surgeons	61	1	80	5	74	168
Year	2006	2010	2008	2009	2008	2007
Inhabitants	5 427 459	48 650	5 326 109	319 368	4 799 252	9 182 927
Active dentists	5 057	38	3 850*	277	4 662	7 441
Active oral hygienists	1 444	17		15	1 142	3 409
Active specialists	201	1		41	490	847
Active orthodontists	142	1		13	205	269
Active oral surgeons	59	0		4	58	151

* Finland: estimated figure.

Annex 2. Oral health workforce

1. Number of inhabitants per oral health care personnel under retirement age

Country	Denmark 2010	The Faroe Islands 2008	Finland 2008	Iceland 2009	Norway 2008	Sweden 2008
1.1 Number of inhabitants/licensed dentists	995	1257	1296	1044	1025	838
1.2 Number of inhabitants/licensed oral hygienists	2076	2723	3037	8871	3809	2031
1.3 Number of inhabitants/licensed specialist	24169	24503	8156	7097	10641	8774
1.3.1 Number of inhabitants/licensed orthodontists	32944	49006	31893	24567	26962	29385
1.3.2 Number of inhabitants/licensed oral surgeons	90733	49006	66576	63874	95985	55097

Sweden: Licensed dental care personnel under 65 years of age. Register data. Source: The National Board of Health and Welfare and Statics Sweden.

The Faroe Islands: The official retirement age is 67, in private practice no age limit.

Finland: Registerdata (Terhikki) 2008. Under 64 years. Including both private and public sector. Data is from register statistics.

Denmark: authorization under 65 years of age Source: National Board of Health Authorization register (mars 2010)

Norway: Number of legitimate under 67 years. The figures are based on Statistics Norway (SSB) and different administrative registers in Norway, such as Norwegian database for education, Health Personnel register from Norwegian Board of Health Supervision, Labour market statistics produced by The Norwegian Public Labour and Welfare Service, and statistics from Norwegian Tax Administration.

Iceland: Oral health personnel 67 years and younger.

2. Number of inhabitants per working oral health care personnel under retirement age

Country	Denmark 2006	The Faroe Islands	Finland 2008	Iceland 2009	Norway 2008	Sweden 2007
2.1 Number of inhabitants/active dentists	1073	1257	1265	1153	1118	1234
2.2 Number of inhabitants/active oral hygienists	3758	2723		21291	4214	2694
2.3 Number of inhabitants/active specialists	27002	24503		7789	11161	10842
2.3.1 Number of inhabitants/active orthodontists	38222	49006		24567	28398	34137
2.3.2 Number of inhabitants/active oral surgeons	91999	49006		79842	102112	60814

Sweden: Licensed dental care personnel who are professionally active, regardless of age. Register data. Source: The National Board of Health and Welfare and Statics Sweden. Employment rate is unknown.

Denmark: Engaged in active employment under 70 years of age include people: employed, unemployed available for work, employed on leave of absence. Source National Board of Health and Statistics Denmark 2006.

Finland: Number of legitimate under 64 years. Statistics Finland and Valvira (National Supervisory Authority for Welfare and Health) 2007.

Norway: Number of legitimate under 67 years. The figures are based on Statistics Norway (SSB) and different administrative registers in Norway, see footnote under "Personnel 1".

Iceland: These numbers are for oral health personnel 67 years and younger in 2009. We do not have the information on how many are full-time.

3. Number of dentists under retirement age per legitimate oral health care personnel¹

Country	Denmark	The Faroe Islands	Finland	Iceland	Norway	Sweden
3.1 Number of licensed dentists/ licensed oral hygienists	2,7	2,2	2,3	9,0	3,7	2,4
3.2 Number of licensed dentists/ licensed specialist	24,0	19,5	6,3	7,0	10,4	10,4
3.3 Number of active dentists/active oral hygienists	3,5	2,2		18,0	3,8	2,2
3.4 Number of active dentists/active specialists	25,2	19,5		7,0	10,0	8,8

¹ The data have been calculated by using the figures from table 1.

Denmark: Denmark have two specialist recognitions; orthodontics and oral surgery.

Faroe Islands:

Finland: The areas of dental specialization are Oral and Maxillofacial Surgery, Orthodontics Clinical Dentistry (Cariology and Endodontology, Periodontology, Prosthodontics, Oral Radiology, Oral Pathology, Oral Microbiology) and Public Health.

Iceland: These numbers are for oral health personnel 67 years and younger in 2009.

Norway: Number of legitimate under 67 years. The figures are based on different administrative registers in Norway. There are seven recognized specialities.

Sweden: Register data. Source: The National Board of Health and Welfare and Statistics Sweden. 3.1 and 3.2 are licensed dental care personnel under 65 years of age, data from 2008 and 3.3 and 3.4 are professionally active dental care personnel, regardless of age, data from 2007. Employment rate is unknown.

Annex 3. Oral health service expenditure per capita

Country	Denmark 2005	The Faroe Islands	Finland 2007	Iceland 2008	Norway 2008	Sweden 2007
4.1 The total oral health service expenditure per capita	217,31 (1618 DKK)		133,41	269,35 (23127 ISK)	258,43 (2118 NOK)	210,01 (2145 SEK)
4.2 The total cost of public dental service (PDS) per capita	84,13 (626 DKK)		73,65	48,97 (4205 ISK)	60,77 (498 NOK)	79,89 (816 SEK)

Denmark: public expenses on oral health care in the public and private sector 2005, Ministry of Finance and estimated "out of pocket expenses" based on Statistics Denmark consumer investigation 2002 to 2004. Number of inhabitants in 2005 was 5411405.

Finland: registerdata (Sotkanet). Total expenditure on oral health care including patient fees, public funding, administrative costs and capital investment. Includes both public and private oral health care.

Iceland: OECD 2007. Euro calculated at the mean rate for the years 2001-2007: 1 Euro = 85,86 ISK.

Norway: The figures are based on Health Accounts in Norway. Health accounts are based on National accounts and System of Health Accounts (OECD 2000). The cost to health purposes includes all expenditure, both private out of pocket payment for patients and public costs that goes to consumption or investment in oral health services. 1 EURO = 8,196 NOK.

Sweden: Source: Statistics Sweden. 1 EURO = 10,213 SEK.

Annex 4. The proportion of population who used oral health services within a year

Country	Denmark 2009	The Faroe Islands	Finland 2008	Iceland 2008	Norway 2008	Sweden 2008/09
Under 18/19/20 years-old %	77	75	77	61	70	
18/19/20 years and older %	64		50		76	56

Denmark: (0-17 years) Estimation based on the number of children aged 5, 7, 12 and 15 years of age who were registered 2009 in the Oral Health Register (SCOR), National Board of Health in relation to the total number of children aged 5,7,12 and 15 year in 2009 Statistics Denmark.

(18 year or more) The number of adults who had oral health care with public subsidy (2.727.318) source: The National Health Insurance Service Registry in relation to the total population (18 year or more) (4.294.246) Statistics Denmark.

The Faroe Islands: Children age 0-16 years in 2007. Estimation based on the number of children aged 7, 12 and 15 years of age who were registered in 2007 in the Oral Health Register (SCOR) in relation to the total number of children aged 7, 12 and 15 years in 2007 Statistics Faroe Islands.

Finland: The findings for Finland (age groups 0-18 year-olds and adults) are gathered for private sector from KELA, The Social Insurance Institution of Finland (the cost of treatment by a dentist in private practice is reimbursed according to a schedule of fees by KELA).

For public sector the data comes from official national statistics (National Institute for Health and Welfare, THL) Statistikkrapport 17/2009, THL (0 år–under 18 år).

Iceland: percentage of children 0-17 years old that have had at least one dental visit in the year 2008. Information from the National Insurance System that reimburses for dental cost.

Iceland: Information not available for older than 18. All dental services are provided by private practitioners and not refunded by state for individuals older than 18 and younger than 67 years old.

Norway: 1.1: Proportion of the population from 3-18 years who are examined/treated in the past year in the public dental service. Data is based data from KOSTRA dental form 1.

1.2: Proportion of the population 21 years and older who have used dental service in the past year. The figures are based on a questionnaire survey; the health interview survey "Levekårsundersøkelsen 2008" from Statistics Norway (SSB).

Sweden: Register data. Source: The National Board of Health and Welfare. Persons 20 years of age and older that received dental care in the state dental care financial support system. Period 2008-07-01–2009-06-30.

Annex 5. Health behaviour in school-aged children

1. Daily tooth brushing (more than once a day) 11-, 13- and 15-year-old girls and boys (%)

Country	Denmark 2005/2006	The Faroe Islands 2009	Finland 2005/2006	Iceland 2005/2006	Norway 2005/2006	Sweden 2005/2006
11-year-old girls %	80	92	55	73	81	86
13-year-old girls %	82	95	53	69	80	85
15-year-old girls%	82	97	61	74	80	87
11-year-old boys %	76	45	37	55	76	81
13-year-old boys %	73	83	35	55	71	79
15-year-old boys %	72	92	39	54	73	76

2. Daily consumption of non-diet soft drinks by 11-, 13 -and 15-year-old girls and boys (%)

Country	Denmark 2005/2006	The Faroe Islands 2009	Finland 2005/2006	Iceland 2005/2006	Norway 2005/2006	Sweden 2005/2006
11-year-old girls %	5	4	2	6	6	3
13-year-old girls %	5	9	4	10	11	5
15-year-old girls%	9	14	4	13	14	6
11-year-old boys %	6	29	5	9	9	4
13-year-old boys %	13	15	7	14	14	8
15-year-old boys %	19	35	9	19	21	13

The Faroe Islands data is obtained from a (Oct. 2009) self-administrative questionnaire study sent to schools (approximately to 50% of the children).

Other countries: Source: *WHO HEALTH BEHAVIOUR IN SCHOOL-AGED CHILDREN (HBSC) 2005/2006*.

Annex 6. Caries free children and adolescents (%)

(5/6 years: d₃mft 12,15,17/18/19 years: D₃MFT)

Country	Denmark 2009	The Faroe Islands 2007	Finland 2003	Iceland 2005	Norway 2008	Sweden 2008
	5 yrs = 84 12 yrs = 69 15 yrs = 47 18 yrs = 32	5 yrs = 59 12 yrs = 47 15 yrs = 22	5 yrs = 53 12 yrs = 42 17 yrs = 20	6 yrs = 58 12 yrs = 34 15 yrs = 20	5 yrs = 79 12 yrs = 48 18 yrs = 16	6 yrs = 74 12 yrs = 61 19 yrs = 30

Denmark: source: Oral Health Register (SCOR), National Board of Health

The Faroe Islands: Færøerne Individdata vedrørende børn og unges tandsundhed indsamles hvert år af Sundhedsstyrelsen efter lov med obligatoriske indberetningsårgage på 5,7,12 og 15 år. Sundhedsstyrelsens Centrale Odontologiske Register

Finland: Official register.* Year 2003 17-year-olds

Iceland: From the Icelandic Oral Health Survey in 2005. Reference: Agustsdottir H, Gudmundsdottir H, Eggertsson H, Jonsson SH, Gudlaugsson JO, Saemundsson SR, Eliasson ST, Arnadottir IB, Holbrook WP. Caries prevalence of permanent teeth: a national survey of children in Iceland using ICDAS. *Comm Dent Oral Epidemiol* 2010; 38: 299–309.

Norway: dmft/DMFT for certain age groups are reported annually to the SSB via KOSTRA (Municipal State Reporting). It is the county-dentists for each county who report the information. Rogaland County Municipal is not included in the average number for dmft for 5-year-olds

Sweden: Population survey. Source: The National Board of Health and Welfare. Sweden does not register missing teeth (m/M).

Sweden:

National statistics exists from year 1985

	1985	1990	2000	2008
3 yrs %	83	91	94	95
6 yrs %	45	60	71	74
12 yrs %	22	40	61	61
19 yrs %				30

The Faroe Islands:

	1991	1995	2000	2005	2007	2009
12yrs %	12	20	32	43	47	53

Finland:

	1985	1994	2000	2003
5 yrs %	48	65	65	53
12 yrs %	15	35	40	42
18yrs %	2	14	16	20*

* Year 2003 17-year-olds.

Norway: dmft/DMFT = 0

	1985	1990	1995	2000	2005	2008
5 yrs %	50	61	65	61	71	79
12 yrs %	19	32	40	48	42	48
18 yrs 5	1	7	11	16	16	16

Denmark:

	1985	1990	1995	2000	2005	2009
5 yrs % (dmft=0)	54	64	67	70	75	84
12 yrs %	17	46	50	58	64	69
15 yrs %	5	23	30	35	43	47
18yrs %	3	10	17	20	26	32

Iceland:

	1986	1991	1996	2005
6 yrs % (d3mft=0)	16,2	30,9	44,6	58,4
6 yrs % (D3MFT=0)	58	81	93	92,7
12 yrs % (D3MFT=0)	3,6	17	47,5	33,9
15 yrs % (D3MFT=0)	0,1	2,8	26	19,9

Annex 7. Dental caries as mean dmft/DMFT in children and adolescents

(5/6 years: d₃mft 12,15,18/19 years: D₃MFT)

Country	Denmark 2009	The Faroe Islands 2007	Finland 2003	Iceland 2005	Norway 2008	Sweden 2008
	5 yrs = 0,5 12 yrs = 0,6 15 yrs = 1,6 18 yrs = 2,7	5 yrs = 1,5 12 yrs = 1,3 15 yrs = 3,3	5 yrs = 0,9 12 yrs = 1,2	6 yrs = 1,67 12 yrs = 2,1 15 yrs = 4,2	5 yrs = 0,8 12 yrs = 1,4 18 yrs = 4,7	12 yrs = 0,9 19 yrs = 2,8

Denmark: Source: Oral Health Register (SCOR), National Board of Health

The Faroe Islands: Sundhedsstyrelsens Centrale Odontologiske Register

Finland: Official register, 2003.

Iceland: From the Icelandic Oral Health Survey in 2005. Reference: Agustsdottir H, Gudmundsdottir H, Eggertsson H, Jonsson SH, Gudlaugsson JO, Saemundsson SR, Eliasson ST, Arnadottir IB, Holbrook WP. Caries prevalence of permanent teeth: a national survey of children in Iceland using ICDAS. *Comm Dent Oral Epidemiol* 2010; 38: 299–309.

Norway: dmft/DMFT for certain age groups are reported annually to the SSB via KOSTRA (Municipal State Reporting). It is the county-dentists for each county who report the information. Rogaland County Municipal is not included in the average number for dmft for 5-year-olds.

Sweden: Population survey. Source: The National Board of Health and Welfare. Sweden does not register missing teeth (m/M).

Denmark:

	1985	1990	1995	2000	2005	2009
5 yrs	1,8	1,4	1,2	1,0	0,8	0,5
12 yrs	3,2	1,4	1,2	1,0	0,8	0,6
15 yrs	6,2	3,3	2,7	2,3	1,8	1,6
18 yrs	7,1	5,8	4,3	3,9	3,3	2,7

Sweden:

	1985	1990	2000	2008
12 yrs	3,1	2,0	1,0	0,9
19 yrs	8,5	6,3	3,6	2,8

Finland:

	1985	1994	2000	2003
5 yrs	2,1	1,1	0,9	0,9
12 yrs	2,8	1,2	1,2	1,2
15 yrs	6,2	2,8	2,6	
18 yrs	9,4	4,7	4	

The Faroe Islands:

	1991	1995	2000	2005	2007	2009
12 yrs	4,1	2,5	1,9	1,6	1,3	1,19

Norway:

	1985	1990	1995	2000	2005	2009
5 yrs					1,2	0,8
12 yrs	3,4	2,4	1,9	1,5	1,6	1,4
18 yrs	10,3	7,4	6,5	5,1	4,9	4,7

Iceland:

	1986	1991	1996	2005	1986
6 yrs (d3mft)	4,9	3,3	2,3	1,67	4,9
6 yrs (D3MFT)	1	0,4	0,1	0,12	1
12 yrs	6,6	3,4	1,5	2,1	6,6
18 yrs	11,1	7,3	3,1	4,3	11,1

From National surveys conducted in 1986, 1991 and 1996 by Sigfus Thor Eliasson. Reference: Eliasson, S. T. (2002). "Caries decline in permanent teeth among Icelandic children and adolescents." *Icelandic Dental Journal* 20: 19–24.

From the Icelandic Oral Health Survey in 2005. Reference: Agustsdottir H, Gudmundsdottir H, Eggertsson H, Jonsson SH, Gudlaugsson JO, Saemundsson SR, Eliasson ST, Arnadottir IB, Holbrook WP. Caries prevalence of permanent teeth: a national survey of children in Iceland using ICDAS. *Comm Dent Oral Epidemiol* 2010; 38: 299–309.

Annex 8. Significant Caries Index (SiC Index)

SiC Index is the mean DMFT of the one-third of a population with the highest caries values.

Country	Denmark 2009	The Faroe Islands	Finland	Iceland 2005	Norway 2009	Sweden 2008
	1,93			4,7	3,5	2,5

Denmark:

Iceland: From National surveys conducted in 1986, 1991 and 1996 by Sigfus Thor Eliasson. Reference: Eliasson, S. T. (2002). "Caries decline in permanent teeth among Icelandic children and adolescents." Icelandic Dental Journal 20: 19–24.

From the Icelandic Oral Health Survey in 2005. Reference: Agustsdottir H, Gudmundsdottir H, Eggertsson H, Jonsson SH, Gudlaugsson JO, Saemundsson SR, Eliasson ST, Arnadottir IB, Holbrook WP. Caries prevalence of permanent teeth: a national survey of children in Iceland using ICDAS. Comm Dent Oral Epidemiol 2010; 38: 299–309.

Norway: 12 year olds examined in the past year in the public dental service. Reported annually to the SSB via KOSTRA (Municipal State Reporting).

Sweden: Population survey. Source: The National Board of Health and Welfare. Sweden does not register missing teeth (M).

Denmark:

Year	12 yrs SiC-index
1975	8,34
1980	7,92
1985	5,75
1990	3,57
1995	3,22
2000	2,66
2001	2,49
2002	2,48
2003	2,45
2004	2,49
2005	2,29
2006	2,20
2007	2,11
2008	1,99
2009	1,93

Annex 9. Edentulous prevalence in adults aged 65–74 years (%)

Country	Denmark 2005	The Faroe Islands	Finland 2000	Iceland 2007	Norway 2008	Sweden
	18		36	33,2	6,7	publiceras senare år 2010

Denmark: The National Institute of Public Health, SUSY a national health interview survey, 2005.

DANMARK tandløs = no natural teeth or roots left in the mouth, Question : Many adults has missing teeth how many teeth do you have left?

Finland: Health 2000 survey, National Public Health Institute (KTL)

Iceland: Numbers from a Health Survey 2007, questionnaire sent by mail. The Public Health Institute of Iceland.

Norway: The figures are based on a questionnaire survey; the health interview survey "Levekårsundersøkelsen 2008" from Statistics Norway (SSB). The health interview survey is a country representative questionnaire and interview survey.

It is important to emphasize:

- That it is only people in households who answer the survey, not people in institutions such as nursing homes.
- That there is relatively significant drop in the oldest age groups in the survey, especially in the age group 67 years and older.

The question people answered to: "Approximately how many of your own teeth do you have left? (Adults have 28 teeth + 4 wisdom teeth.)". 4 alternatives were given: 1: 20 or more, 2: 10–19, 3: 1–9, 4: 0.

Sweden: Register data. Source: The National Board of Health and Welfare.

Annex 10. Functional occlusion prevalence in adults aged 65–74 years

The proportion of adults aged 65-74 years with 20 or more natural teeth%

Country	Denmark 2005	The Faroe Islands	Finland	Iceland 2007	Norway 2008	Sweden
				65–79 yrs old	2008	
	50			32,9	66	

Denmark: The National Institute of Public Health, SUSY a national health interview survey,, 2005.

Island: numbers from a Health Survey 2007, questionnaire sent by mail. The Public Health Institute of Iceland.

Norway: The figures are based on a questionnaire survey; the health interview survey "Levekårsundersøkelsen 2008" from Statistics Norway (SSB). The question people answered to: "Approximately how many of your own teeth do you have left? (Adults have 28 teeth + 4 wisdom teeth.)". 4 alternatives were given: 1: 20 or more, 2: 10-19, 3: 1–9, 4: 0.

Sweden: Register data. Source: The National Board of Health and Welfare.

Annex 11. Poem by Jørgen Underthun (participant from Norway)

NORDISKE KVALITETS INDIKATORER

Hva er det vi tror vi sporer med kvalitetsindikatorer?
Vil vi finne en prosess som ikke er noe særlig tuss?
Eller er det et produkt som vi finner ganske smukt,
men som enda kan bli bedre og vi dermed må få hedre?
Hva har vi av resultat som kan være media-mat,
som kan tåle kritisk lys med et lett hovmodig fnys?
Og hvis vi ser litt på struktur ser vi kanskje trenden snur,
så en sammenlikning går når vi måler neste år?
Det vil nok ri meg som en mare om vi ikke skulle klare
å bli enige over bordet om det vanskelige ordet
indikator, kvalitet, det er vrient som vi vet.
Men å sammenlikne tall får vi til i alle fall!
Det er ikke godt å fatte hva som indikerer at det
er et godt produkt vi har. Nei, man kan da bli helt rar!
Vi må kikke på mandatet og så se om vi har klart det
som det ventes at vi gjør, nemlig gå fram slik vi bør:
”Hva slags kvalitet er det?” skal vi alltid starte med.
Er det evidens basert? Det forventes at vi vet!
Vi må spørre: er det viktig? Synes brukeren det er riktig
at vi legger vekt på dette? Da er vi inne på det rette.
Har vi teller eller nevner er det like før vi evner
å få godkjent indikator uten bruk av kalkulator.
Men vi har vel ikke glemt’n denne gode pasienten
som skal få det aller beste, slik at han gir skryt til neste?
Da er jobben vår gjort bra Den honnør skal vi da ha,
og da kan vi snart forlate dette indikator-pratet.

Helsingfors 3. desember 2009