

ABSTRACT

The oral health care systems in the Nordic countries have both common and different features

The oral health care organisations of Denmark, Finland, Norway and Sweden have many common features. They all have both a public and a private sector. Free comprehensive dental care for children and adolescents is offered in the Public Dental Services (PDS) but access and schemes of payment for adult dental care in the PDS vary between the countries. Iceland has no PDS. Use of private services is common among adults and private care is reimbursed from tax revenues to varying extents in all Nordic countries. In spite of many major and minor amendments, no fundamental changes have occurred in the care provision systems since the 1970s, except Iceland. The greatest treatment needs have moved from the young to the old and special needs groups. Organising good and equitable dental care for these groups remains a challenge.

Systems for provision of oral health care in the Nordic countries

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In most European countries dental care operates outside the mainstream health care systems and the role of private services is more significant than for other somatic care. Also the financing of dental care is different (more out-of-pocket payment). Equality and solidarity have been the ideological basis of the Nordic Welfare State model, which includes a wide range of publicly funded and provided services. Accessible oral health care and dental services according to needs have also been important and oral health care provision systems in the Nordic countries differ from those in other member states of the European economic area (EEA). Typical for the Nordic countries is a relatively large public sector along with a private sector. The public sector service is staffed by salaried personnel and includes rural and sparsely populated areas. Care provision is decentralised and local government (regions or municipalities) has great autonomy in organising the services. Most other EU-countries provide oral health care either largely or totally within the private sector. In a number of countries, private care is reimbursed through statutory health insurance systems, which may negotiate fees with dental associations and central governments' roles are weak (1). The on-going economic and financial crisis in the EU area, with

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increasingly greater numbers of elderly citizens, puts pressures on governments to reform the health care systems to ensure a more efficient use of public resources. The aim is accessible, affordable and high quality health care.

Tilskudsordninger

Country	Reimbursement of private dental care	Coverage	Treatment covered
Denmark	Danske regioner National Health Insurance	All adults	Basic treatment, not prosthetics
Finland	Kela National Sickness Insurance	All adults	Basic treatment, not prosthetics
Iceland	Sjúkratryggingar Íslands Icelandic Health Insurance	0-18 year olds, old age and disability pensioners, adults with certain diseases or conditions	Basic treatment, removable prosthetics
Norway	Folketrygd	Adults with certain diseases or conditions <18 years	Certain specialist treatment, orthodontics for the young
Sweden	The National Insurance ATB Adult dental care subsidization by the state	All adults	Limited support to basic care, high cost protection

* An additional private dental insurance exists in Denmark

Table 1. Reimbursement systems for private dental care, population groups and treatment covered in the Nordic countries.

Tabel 1. Tilskudsordninger i privat tandpleje, befolkningsgrupper samt behandlingstyper, der er dækket af tilskudsordningerne i de nordiske lande.

The aim of this paper is to describe how oral health care delivery is organised in the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) and what kind of reforms have been made or are planned in the near future. We also present and compare some data on the dental work force, education, use of dental services, oral health, financing, payment systems and costs.

Material and methods

A description of the systems for the provision of oral health care in Denmark, Finland, Iceland, Norway and Sweden was written by authors coming from each country, based on their knowledge, and national and international reports and publications.

Oral health care provision systems

Denmark

The oral health care system in Denmark consists of a public and a private sector (Tables 1 and 2). Dental care (including orthodontics) for the young is free of charge and organized by the municipalities but the services may be provided in private practice, too. The public dental care system for children was launched in 1972 and consolidated under the Dental Care Act in 1986 by including all children and adolescents up to 18 years of age. Since 1994, the municipalities have also been responsible for providing dental care to adults or elderly persons who have difficulties in using private services because of reduced mobility or physical or psychological functional capacity (omsorgstandplejen). In 2015, the most a patient would pay was DKK 485 (EUR 65) per year in this program. Children and adults who suffer from mental illness or mental handicaps can have specialist care in public clinics.

Most adults obtain dental care from the private sector. The National Health Insurance, "Danske Regioner" reimburses the costs of care included in the insurance scheme according to an agreement with the Danish Dental Association. The scheme in-

cludes preventive and basic oral care and the refund rates vary between 30% and 65% depending on type of treatment and the age of the patient. Crowns, bridges and removable prosthetics are not reimbursed. In addition, adults with Sjögren's syndrome and cancer may receive a subsidy for oral health care in private practice. About 2.2 million adults have a private health insurance "danmark" that includes dental care. Three different reimbursement and payment levels can be chosen. Practically all kinds of treatment including prosthetics are covered and the reimbursements are listed according to a special scheme.

Finland

In Finland, municipally organised school dental care started in 1956. The present Public Dental Service (PDS) was established in 1972 and it is run by local municipalities alone or in collaboration with several municipalities. Initially, the PDS catered almost entirely for children and adolescents. Since the 1980s, young adults and some special needs groups were successively given access to the subsidised services of the PDS. Parallel basic care in the private sector started to be reimbursed from the National Sickness Insurance (NSI) for the same younger adults. Older adults were expected to visit private dentists or clinical dental technicians and to pay all costs themselves. Frequent edentulousness (25% of all adults and 64% of the 65+ years old in the late 1970s), explains the unequal system. Before 2002, access to the PDS and reimbursement of private care from the NSI was restricted to younger adults, special needs patients and veterans of World War II. In the PDS, the young have free care and adults pay fixed fees. In 2002-2003, a major Dental Care Reform abolished the age restrictions and adults older than 46 years (about 40% of all adults) were given access to the PDS. Reimbursement of private care (except prosthetics) was also extended to cover them (Table 1). Due to cheaper care, →

waiting lists for the PDS became long after the Reform. In 2005, the Care Guarantee legislation stipulated that emergency dental care should be offered immediately or within three days and examinations and care within six months in the public sector. The private sector was left untouched by these new regulations.

Specialised dental services have traditionally been offered mostly in the private sector, but after the Dental Care Reform numbers of specialists others than orthodontists increased in the PDS. Following the system in general health care, regional hospitals offer specialised dental services (on referral) and the University hospitals are responsible for the most advanced oral health care.

Iceland

Practically all dentists in Iceland are privately employed. From 1957 to 1990, Iceland had public dentists employed by the local municipalities. The Health Insurance (SÍ) reimburses private dental treatment for children, adults with chronic illnesses, and old-age and disability pensioners (2). For these adults 50, 70 or 100% of the treatment costs including removable dentures may be covered (according to the public fee schedule). Crowns, bridges and implants are reimbursed by a fixed fee per year.

Norway

In Norway, the great majority of dentists (70%) work in the private sector (3) and adults pay for the services out-of-pocket. Historically, the Parliament decided in 1917 that all school children should have free dental care. Lack of dentists hindered this. A Public Dental Service was first established in the north of Norway in 1949 and was gradually spread all over the country. From 1955 to 1973, newly graduated dentists were obliged to practice in the PDS in rural areas, mostly in the North. Today,

the 19 county councils are responsible for organising public dental services. The PDS offers free treatment for children up to 19 years of age. Parents contribute to the cost of orthodontics that is often provided privately and reimbursed by the National Insurance Scheme (Folketrygd). Young people aged 19 to 20 years have access to the PDS but pay a low fee. Mentally disabled adults, elderly in nursing homes, persons receiving systematic nursing services at home, and some other special needs groups such as people with substance abuse issues (drugs, narcotics) and refugees, have free care in the PDS. Non-prioritised adults pay a fee set by the counties. Their share of all patients in the PDS was 18.5% in 2013 (3). Great turn over of dentists in the PDS has been a problem because younger graduates often work in the PDS for a few years before moving to the private sector.

The National Insurance Scheme reimburses dental care for adults who have certain diseases or medical conditions such as periodontal disease, traumas, developmental conditions, oral cancer, dry mouth or other rare diseases. Treatment is usually provided in the private sector.

Most dental specialists work in the private sector and in the bigger cities in Southern Norway. Only 11% of the specialist years of work were provided in the PDS in 2013. More recently specialist centres (kompetansesenter) have been established in connection of the PDS in five counties. These centres are financed by the state, county councils and patient fees. In 2012, a project started in Tromsø, Trondheim and Oslo to investigate ways to establish oral medical services at hospitals.

Sweden

Since 1938, county councils have been responsible for organising public dental services for children and adults. In 1975, a national "dental insurance programme" was introduced co-

Tandplejesystemernes struktur

Country	Free care in the PDS	Access to the PDS against payment	Proportion of dentists working in the PDS %	Proportion of dental hygienists working in the PDS %
Denmark	0-18	Institutionalized elderly and persons not able to use private care for various reasons	20	20
Finland	0-17	All adults	44	50
Iceland	No PDS	No PDS	No PDS	No PDS
Norway	0-18 and some adult special needs groups	Other adults when the PDS has capacity	28	55
Sweden	0-19	All adults	57	60

Table 2. Population groups having access to public dental services and proportions of dentists and dental hygienists working in the PDS in the Nordic countries.

Tabel 2. Befolkningsgrupper med adgang til tandpleje i offentligt regi samt procentandelen af tandlæger og tandplejere, der arbejder i den offentlige sektor.

vering all adult inhabitants from the age of 20 years, with the aim of making dental care financially accessible to all citizens. For almost 25 years dental care in both the public sector (Folk-tandvården) and the private sector had the same fixed fees and all treatment – even prosthetics – was generously subsidised (25-75%) by the state (tax revenues). In addition, a high cost protection system gave extra support to patients with great treatment needs. In spite of numerous smaller cuts in the benefits during the years, spending on dental care was considerably higher in Sweden than in the neighbouring countries. In 1999, free pricing was introduced in the private and public sectors (county councils) and reimbursement of basic care for people in working age was lowered considerably. Protection from high costs was kept and the elderly (65+) received extra support. In 2008, a totally new dental support system was introduced (Allmänna tandvårdsbidraget, ATB). This aimed to maintain the good results achieved in oral health care. Adults receive a low support of SEK 150-300 (EUR 15-31) per year for basic care to be used either in the public or private sector. After that, they pay all their costs up to SEK 3,000 (EUR 308) according to the reimbursement fee scale kept by the Dental and Pharmaceutical Benefits Agency (TLV). This fee scale is lower than the true treatment costs. The high cost protection system reimburses costs over SEK 3,000 (EUR 308) by 50% and costs over SEK 15,000 (EUR 1,540) by 85%. The County Councils receive separate financing for dental care of special needs groups. These include persons needing dental care as part of their medical treatment, persons living in institutions or having medical treatment at home or having functional impairments. The County Councils also arrange free, out-reach dental screenings of certain groups, and education of oral health habits for personnel working in old people's homes. This commission can be contracted out to the private sector, too.

The county councils are responsible for arranging dental specialist treatment for the whole population and a major part of specialist treatment is provided in the PDS. Oral surgeons can also be placed in hospitals being part of the general health care organisation. A hand-full of private specialist clinics have been established in bigger cities.

Dental work force

In Denmark with 5.6 million inhabitants, 20% of the dentists ($n = 4,900$) worked in the PDS in 2010, 63% in private practice and 17% in universities, hospitals, armed forces or private companies (4). In Finland (5.4 million inhabitants), almost half (44%) of the working aged dentists (4,600) were employed by the PDS, slightly more than a third (38%) were in private practice, 9% worked in universities, hospitals etc. and 9% did not work in dental care (5). In Iceland the number of (active) dentists is 274 in 2015 and the number of inhabitants 321,000. In Norway, with 5.1 million inhabitants the number of dentists is 4,378, of them 70% work in private practice and 30% in the PDS (3). About 1,000 of them are educated outside Norway. In

HVAD KAN VI LÆRE AF HINANDEN?

Artiklen beskriver tandplejesystemerne i de fire lande Danmark, Finland, Norge og Sverige, og selvom der er mange lighedspunkter i tandplejesystemerne i Norden, så fremhæver artiklen de væsentligste forskelle. Hvad

enten der ønskes en grundlæggende ændring, eller der alene er tale om fortsatte småjusteringer af tandplejesystemet i det enkelte land, så vil denne artikel kunne inspirere beslutningstagere på forskellige niveauer.

Sweden, there are 9.6 million inhabitants and about 7,600 clinically active dentists. Most of them (4,100) work in the public sector, slightly fewer than half (3,400) in the private sector and about 5% with education and administration (6).

There are about 1,900 dental hygienists in Denmark, 1,750 in Finland, 955 (active) in Norway and 3,600 in Sweden. Iceland has 14 active dental hygienists. In Sweden, 86% of the dental hygienists work with dental care. Denmark (367), Finland (250) and Iceland (5) have clinical dental technicians providing edentulous persons with full dentures without dentists' involvement. In Denmark, they also provide partial dentures in formally defined collaboration with dentists. Finnish clinical technicians have been asking for similar enlargement of their sphere of activities, as older people retain more teeth than earlier, but this has not been understood by decision makers. The numbers of dental laboratory technicians must be estimated: Denmark 500 -1000 (several trade unions), Finland about 520, Iceland 70-80, Norway 660 and Sweden 1,500. Proportions of dentists and hygienists in the PDS vary according to the extent of access to the public services (Table 2).

Education of dental personnel

Two universities educate dentists in Denmark (Aarhus and Copenhagen), four in Finland (Helsinki, Turku, Oulu and Kuopio), one in Iceland (Reykjavik), three in Norway (Oslo, Bergen and Tromsø) and four in Sweden (Stockholm, Göteborg, Malmö and Umeå). The Institute of Clinical Dentistry in Tromsø opened in 2004 and education in Kuopio was restarted in 2010. Dental education takes five years in Denmark, Norway and Sweden, 5.5 years in Finland and six years in Iceland. A vocational training period in the PDS is included in the Finnish education (6 months). Sweden omitted a corresponding training period because the PDS could not manage training students besides taking care of increasing numbers of patients.

In Denmark dental hygienists are educated in Aarhus and Copenhagen. Four Universities of Applied Sciences train den-

tal hygienists in Finland. Iceland has no training. Norway has four (Oslo, Bergen, Tromsø and Elverum) and Sweden six educational institutions for this purpose (Stockholm, Göteborg, Malmö, Umeå, Jönköping and Kristianstad). Falun was closed some years ago and Karlstad recently. Dental hygienist education takes 3.5 years in Finland and three years in Denmark and Norway. In Sweden the dental faculties have lengthened the training from two to three years to correspond with the bachelor education of other middle-long health care professions.

In Denmark the education of clinical dental technicians takes place at the University of Aarhus. In Finland dental technicians have been educated at the University of Applied Sciences in Helsinki but there are plans to move the education to Turku. In Norway, the University Colleges of Applied Sciences in Oslo and Akershus and in Sweden the four dental faculties educate technicians. Except in Denmark, the education leads to a bachelor degree.

Use of dental services

In Denmark, dental care coverage rate among children and adolescents is estimated to be 99%; 88% of them attend public and 12% private clinics. According to a national survey in 2005, 79% of the adults (16+ years) reported regular dental visits during the last five years. In younger age groups, 72-89% and in the older (75+ years), 55% reported such visits (7). A decline in adults' dental visits was seen in 2013. According to Statistics Denmark, this could be due to restricting reimbursement of scaling and polishing to once a year. Less than 25,000 persons were enrolled in "omsorgstandplejen" for frail elderly although at least 60,000 were estimated to be eligible for the programme (8).

In Finland, most children and adolescents use public and only 1% uses private dental services. Due to individualised recall intervals, about 90% of the young visit a dentist or dental hygienist at least every second year. According to annual statistics 26% of adults use the PDS and 25% private services (5). A longitudinal register study indicated that nearly 50% of the working aged visited the PDS and almost 40% the private sector during a three year period. The difference between annual and longitudinal figures is due to the more frequent visiting pattern among private patients who are usually offered annual or biannual recalls while the PDS does not have resources to recall adults which leads to more irregular visiting patterns (9). Private patients have higher education and income than those who use the PDS. About 80,000 persons are estimated to use clinical dental technicians per year.

In Iceland only 60% of all children aged 0-18 years visited a dentist in 2012. A recent study among dentists indicated that parents did not demand care for their children as much as before, probably due to costs (10). In 2014, 89% of the children covered by the new insurance contract had seen a dentist (11).

In Norway children's up-take of services in the PDS is high; 97% of the 3-19-year-olds are covered during a two year pe-

Tandsygdomsindikator

Country	Mean DMFT of 12-year-olds	Edentulous 65 + %
Denmark	0.5 (2013)	28 (2005)
Finland	0.9 (2011)	44 (2000), 17-40 (south-north 2011)
Iceland	2.1 (2005)	33 (65-74yrs 2007)
Norway	1.0 (2013)	32 (2003)
Sweden	0.8 (2010)	about 3 (2015)

Table 3. Mean DMFT-index values in 12-year-olds and proportions of edentulous elderly in the Nordic countries.

Table 3. Gennemsnitligt DMFT (samlet carieserfaring) blandt 12-årige samt procentandelen af tandløse ældre i de nordiske lande.

riod. In addition to 698,000 children and adolescents, about 78,000 dependent elderly, 115,000 other prioritised and 196,000 non-prioritised adults visited the PDS in 2013 (3). According to a questionnaire survey in 2004 (12), 78% of the adults had visited a dentist during the previous year and 87% during the previous two years.

In Sweden 85-95% of the young (3-19 years) are seen by the PDS. Of the adults about 50% are treated by private dentists and 42% by the PDS. In 2003, 85% of those aged 20 to 85 years had visited a dentist or a dental hygienist at least every second year (13).

Oral health and treatment needs

The mean DMFT-index values among 12-year olds are low in all countries except Iceland (Table 3). A general perception is that great improvements have occurred in working age adults' oral dental health during the past 20-30 years; there are more natural teeth, fewer carious teeth, and more fillings than before. Periodontal conditions may not have improved as much. Among the elderly, the picture is more variable. According to a survey in 2005, 17% of the residents (65+ years) in Copenhagen had no natural teeth when the corresponding figure was 38% in Nordjylland. Edentulousness was associated with low education and income (7). In Finland, a national clinical study showed that edentulousness was more common in northern (22%) than in southern Finland (10%). In the age group 65+ years, 44% were edentulous, in the North 64% and in the South 37% (14). Edentulousness among the elderly (67+ years) was also found to be more common in northern (67%) than in southern Norway (11%; 15). In Iceland in 2007, 33% of the respondents aged 65-74 years claimed to be edentulous (16). In Jönköping in Sweden, edentulous individuals

between 40 and 70 years of age decreased from 16% in 1973 to 1% in 2003 (17). Recent register data show that only 0.9-2.2 % of those between 60-79 years old were edentulous in Skåne (18) and a clinical study also from Skåne showed that, among elderly persons, removable dentures were rarely used to replace lost teeth, instead fixed prosthetic constructions were chosen (19).

Financing and costs of oral health care

In Denmark, the PDS, responsible for the young and disabled elderly, is financed by local tax revenues. Adults' dental care is financed by patient fees and national tax revenues. In 2013, the total cost of the public oral health care program (den kommunale tandpleje) was DKK 2,162 million (EUR 288 million). The subsidy from the National Health Insurance towards private care was DKK 1,553 million (EUR 207 million). In total, the public expenses were DKK 3,715 million (EUR 495 million; (20). The user fees for subsidised private treatment can roughly be estimated to DKK 5,973 million (EUR 796 million) (21). In addition, there are costs for non-subsidised treatment about DKK 2,654 million (EUR 354 million). Thus the total cost of oral health care was around DKK 8,627 million (EUR 1,150 million) (21). Contribution from the National Health Insurance has been rather stable - 18 % of the total costs in 2012 compared with 20 % in 2002 (20). Compensation from the private health insurance fund 'danmark' towards oral health care was about DKK 1,000 million (EUR 133,5 million) in 2013 (22).

In Finland, the PDS is financed by a combination of national and local tax revenues and patient fees. The National Health Insurance is financed by contributions from employers, employees and central funds (general taxation). EUR 1,066 million was used on dental care in 2013. Of these costs, 55% (EUR 582,8 million) were caused in the private sector and 37% (EUR 391,5 million) in the PDS. The cost of prosthetic care provided by dental technicians was estimated to be 7% (EUR 78 million) (23). In the PDS, patients paid on average 29% of the costs and in private care, 70% plus all costs of prosthetic treatments (5).

In Iceland in 2012, 86% of the oral health care costs were privately funded (24). The state budget for reimbursement of dental care was ISK 1.543 million (EUR 10,5 million) and the planned budget for 2015 ISK 2,542 million (EUR 17,2 million) (25).

In Norway, the PDS is financed by patient fees, and general and local taxation. The National Health Insurance reimburses some private care, mainly specialist treatment. The total cost of the PDS was NOK 3,100 million (EUR 369 million) in 2013 (3). The National Health Insurance reimbursement for dental care was NOK 1,876 million (EUR 249 million) in 2013 and estimation for 2014 NOK 2,045 million (EUR 271 million) (26). Of this sum about a third was used for orthodontic care of 190,000 children and adolescents in the private sector and the rest for treatment of 372,000 adults in the private sector (Helsedirektoratet, personal communication). The total cost of oral health care was estimated to be NOK 15,600 million (EUR 2,067 mil-

lion). Of this the patients paid 73% out-of-pocket (Statistisk sentralbyrå, personal communication).

In Sweden, children's and adolescents' dental care is financed solely by regional taxation and costs SEK 1,939 million (EUR 217 million) (27). Adult dental care is financed by patient fees and national tax revenues. The total cost of all dental care was in 2013 about SEK 24,000 million (EUR 2,700 million) (28). Most (80%) of the state subsidy of SEK 5.300 million (EUR 593 million) goes to subsidise "high costs" and SEK 1,000 million (EUR 112 million) is used to cover the low general dental contribution used by 75% of the patients. Of the patients 22.5% have had reimbursement exceeding the lower high cost limit and 2.5% the higher limit (29). In addition about 300,000 special needs patients in the county councils have had special dental contributions, SEK 809 million (EUR 90,6 million in 2013) separately financed by the state. Of this sum SEK 593 million was used for necessary dental care of 147,000 persons, SEK 28 million for out-reach dental screenings of certain groups, and SEK 4 million for education of personnel working in old people's homes etc. (about 35,000 persons) (27).

A Nordic report compared total oral health care costs per capita in US\$ in 2008 and found them highest in Norway (274) and Sweden (272) and lower in Iceland (204), Denmark (202) and Finland (193) (30). However, it should be considered that the purchasing power varies in these countries.

Recent reforms and plans for the future

Denmark recently underwent a municipality reform which had no major effects on the PDS. A worry has been the low participation rate in the public dental program for dependent elderly. Also, oral hygiene practices and preventive measures for elderly in nursing homes are in general given low priority. A political decision was made to let the National Board of Health oversee the program (8). Some active persons with special engagement in social matters have raised funds and established clinics to treat persons with severe social problems (alcohol abuse, drug addicts, homeless etc.) free of charge. The staff members usually work without pay.

In Finland the municipalities (320 in 2013) will undergo reforms in the coming years. The objective is fewer and stronger municipalities with the necessary economic and human resources to provide and finance welfare services. In addition, a major health and social care reform is under construction. The aim is to transfer responsibility for health care and social services from municipalities to a lower number of new regional authorities to improve efficiency. The work has proven to be difficult. Because oral health care is part of general health care, the five University Hospital regions are from the beginning of this year (2015) obliged to arrange 24 hours emergency dental services. Due to economic constraints, reimbursement of basic dental care in the private sector by the NSI was lowered from 30% to 24% from the beginning of this year.

In Norway there are also plans to lower the numbers of municipalities. As primary health care is organised by municipali-

ties and specialised medical care was some years ago taken over by the state, the future of the county councils as organisers of dental services is being discussed. Recently the Government suggested that municipalities would take over the PDS.

In 2013, the recovering economy in Iceland facilitated a new agreement on children's dental care between the Ministry of Health and the Dental Association. Children's dental care will be fully paid by the Health Insurance (SÍ) successively by 2018, except for an annual charge of ISK 2 500 (EUR 15,62). The first step was taken in May 2013 when the 15-17-year-olds were covered, and the second in September 2013 when those aged 3, 12, 13 and 14 years were included. The 1st of January each year thereafter two more age groups will be added. A prerequisite for SÍ's payment is that children are registered with family dentists. They recall the children for regular check-ups individually at least every second year. Preventive measures and necessary care are included. Cost of orthodontic treatment is reimbursed according to special rules. The goal is that children's dental health should equal the best available in the Nordic countries (2). The children not included in the new system yet pay according to the old contract.

In Sweden, the "third wave" of the new state support system for dental care aiming to improve the oral health care of the widely defined special needs patient groups started in 2013. The aim is to improve oral health care of those most in need and to double the number of recipients of benefits in this scheme – mostly in the PDS.

The PDS has introduced a new payment model called "Frisk-tandvård" (Contract Care) to stimulate regular and preventive care based on individual needs. The model is supported by the government and offered in all county councils. Before a patient can sign a contract, a dentist or dental hygienist undertakes an examination and evaluates the future needs of dental treatment. Afterwards, the patient is given an individually tailored "home-care-program", and an annual or monthly fee for the next three years based on the risk classification. The contract covers all examinations, preventive and conservative care including single crowns and emergency care. Contracts can be transferred when patients move. In June 2014, 600 000 persons had such contracts (31).

Discussion

In the mid-1990s, Holst reviewed development of the oral health care provision systems against development of the welfare states in the Nordic countries (32). She stated that in the beginning, providing access to oral health care for children and later offering comprehensive preventive and curative services for all children and adolescents was very much in line with the expansion of welfare states, highlighting the public responsibility of service organisation. During the reorientation period of the welfare states starting in the 1990s, more attention was paid to the efficiency of children's dental services, resulting among other things in individual examination intervals and expanded use of dental hy-

gienists. In the geographically large countries (Finland, Norway and Sweden), the public sector was from the beginning meant to offer dental services to adults as well as children. Because this did not happen in all countries, national health insurances were harnessed to reimburse part of the expense of private adult dental care to increase accessibility. Here the population groups and treatment measures covered and the amounts of reimbursement varied greatly between countries. According to Holst, in early 1990s, a change in political rhetoric was seen in dental care. For example, free choice of care provision sector in children's dental care was introduced in Denmark and Sweden and a purchaser provider split in the Swedish PDS (32).

This paper shows the situation some 20 years later. At the end of the 20th century, global market forces became more active in health care. Controlling costs arising from higher demands from ageing populations and increasingly expensive medical technologies became necessary. New tools, such as the introduction of more explicit measures of performance and private sector styles of management in public services, contracting out and privatisation, typical features of the New Public Management agenda, were taken on board. Market-driven health care models were hoped and believed to produce services more efficiently, to force prices down and to improve quality (33). As regards dental care, adults were seen to retain their own teeth to a much greater extent than earlier and developments in prosthetic and aesthetic dentistry increased the demands for care but also its costs. Privatisation of oral health care took place in the Netherlands, Iceland and the new Eastern European EU member states. The main reasons were financial. The last mentioned countries had had entirely public provision of dental care as part of primary health care.

This paper shows that no radical structural changes have occurred in the oral health care provision systems in the mainland Nordic countries. The PDS continues to cater for the majority of the young; their use of private services has stayed at a low level. Frequent examinations, comprehensive and preventively orientated care cover practically all children and adolescents. Resources used are great, especially in relation to treatment needs, but are defended by strong tradition, improvements in oral health, contented parents and dental personnel. Worldwide, salaried services are considered particularly suitable where care is directed to vulnerable groups in the community. Proper use of auxiliary personnel is known to help keep costs under control (34).

As regards adult dental care, the public and private sectors continue to complement each other rather than compete with each other. In Finland and Sweden, the PDS has a more prominent role in adult care than in Denmark and Norway. Thus Finland finally abolished the age limitations in adults' access to public dental care in 2002, which had been planned from the 1970s but postponed during the depression of the 1990s. The reform increased adults' demand for dental care considerably, but competition between sectors was not observed (35). Swe-

den has had an earlier start with organised oral health care and also a much more generous reimbursement system of dental care costs of adults than the other Nordic countries. The bigger adjustments in the adult dental care reimbursement system around the turn of the millennium and in the beginning of the new millennium are worth noticing because cuts in subsidies and adjustments of beneficiary groups were not made due to economic concerns only but also due to greatly changed treatment needs among the adult population. The changes aimed to give more support to those with greater needs and highest costs rather than supporting everybody. In Sweden, the preconditions for competition between the public and private sector have been good. As regards subsidy of adult dental care “money followed the patient” and public dental care for adults had to be financed by patient fees only, which put great pressure on efficient production of public dental care. There have been fervent discussions on the justification of “making profits on taxpayers’ money in welfare systems” when international “risk capital companies” have penetrated the Swedish social and health care markets and moved their profits out of the country. Dental care has also been mentioned in this connection. Although new companies have made efforts to take market shares, the PDS and the traditional private dentistry have kept their positions.

In Denmark, no big changes have occurred in the oral health care provision system. A specific feature is the additional private insurance covering adult dental care. It is popular, 40% of the adults covered by the National Insurance have subscribed to it. There are many advantages but a precondition is that applicants have to fulfill certain criteria: be less than 60 years old, completely healthy, not have used medicines and had treatment by a physiotherapist or psychologist etc. during the preceding 12 months. Consequently, persons with high social background are more often insured than those with low social status (36), which does not contribute to equity.

In general, wealthy countries subsidise oral health care more than poorer countries. Norway is an exception to this rule and in spite of or being one of the wealthiest countries in the world, most adult dental care is paid out-of-pocket. A recent government report stated that “Norwegians are so wealthy that they can pay for their dental care themselves”. It is also usual that dentists’ associations support reimbursement systems but this has not been the case in Norway. During recent years, the PDS has grown slightly through inclusion of new prioritised special needs patients and increased treatment of adults (3). To avoid unfair competition, the PDS has to keep separate accounts on adult dental care to show that care of non-prioritised adults is not being subsidised with tax revenues.

Iceland presents a different story. The 2008–2011 Financial Crisis was caused by the collapse of all three of the country’s major privately owned commercial banks which resulted in a severe economic recession. During bad economic times oral health care is usually not considered important. Proximity to the USA and the fact that high numbers of health care special-

ists and other academics are educated there is likely to influence the society and its health care system. It is obvious that it will be more difficult for Iceland and Finland to go on financing a traditional welfare society in the years to come than for the other three countries. Iceland still has great depths and in Finland large structural changes, high unemployment and low productivity of companies challenge the economy. Recently, omitting adult dental care totally from the PDS service palette in Finland was suggested by a politician to help reduce public expenses. As mentioned earlier, subsidation of private care has already been lowered.

When writing this paper, we noticed that it had become difficult to find comparable data, especially on work force. Controlling authorities register numbers of authorized professionals, public employers know the numbers of their employees and trade associations their members. Retirement ages vary between countries and many professionals have several jobs. Costs of private dental services have become more difficult to estimate and costs of public expenses are counted in many different ways. Thus, the numbers we are publishing have to be taken with some caution. In spite of the uncertainties, it is obvious that the Nordic countries put considerable personnel resources (1,140-1,260 inhabitants per dentist) into oral health care compared with many EU member states (37). There are also many universities educating dentists in relation to population numbers, but this is, of course, related to the geographical sizes of the countries. High numbers of graduates (many of them Nordic citizens) coming from dental schools in the EU area should probably be more noticeable in free labour markets. The numbers of dental hygienists in the Nordic countries are among the highest in Europe (roughly 2,900 -3,500 inhabitants per hygienist). There have been goal-directed attempts to educate high numbers of dental hygienists and increase task sharing to make care more prevention oriented, efficient and cost-effective. The idea was also to educate fewer dentists. In Denmark, for example, a reduction by 1,000 dentists was expected from 2007 to 2019 but so far the number has fallen by 400 in 2013 (4). In other countries the numbers seem not to have fallen except Iceland where a number of dentists immigrated to Norway for economic reasons. Numbers of dental technicians seem to have fallen slightly, probably partly due to increased competition from abroad and changes in treatment needs.

Use of dental services can be considered very high by the young and high or moderate by most adults in all countries. Foreign origin, low social status, old age, general illnesses and long sick leaves, unemployment etc. have been shown to decrease utilisation of dental services. Between 4-12% of 16+ year olds have abandoned dental visits though they may still need them (30). Local studies indicate higher non-utilisation. Thus targeting the dental services more according to needs has correctly been an issue in all countries. Improvements introduced and planned as well as definition of special needs groups vary considerably due to different traditions, the work of interest groups

and other circumstances. Certain oral treatment is also given at hospitals, often as medical treatment and under medical payment systems. Here the variations between countries are great and the matter would need more attention.

Denmark and Finland have a tradition of undertaking representative clinical dental epidemiological studies on adults and the elderly. These show that oral health in Denmark is better than in Finland. The higher rate of edentulousness in Finland reflects history, poorer access to care, economic constraints and probably also population attitudes that have not considered teeth and dental appearance important. Sweden and Norway have local clinical epidemiological studies. Questionnaire surveys have been usual in all countries. Development of the IT systems offers possibilities to collect register data on various aspects of oral health care. Denmark, for example, having collected data on children's oral health and care since 1972, has registered since 2000 the types of care provided and a few dental health indicators on adults within the reimbursement system of private care. In Norway, detailed statistical information is collected from the PDS, but not from the private sector. In 2007, the Swedish PDS-organisation (Sveriges Folktandvårdsförening) started a national register SKaPA, Swedish Quality Register of Caries and Periodontitis. Today 15 of the 21 county

councils and one private clinic belonging to "Praktikertjänst" have joined it. The system collects data directly from patients' records and there have been attempts to compare care provided with National Guidelines in, for example, periodontology (38). Another quality register called NQRDI (National Quality Register of Dental Implants) follows survival of dental implants and related factors (39). In Finland, a recent register study revealed surprising discrepancies between treatment needs and treatment provided (40) indicating a need for treatment guidelines and changes in the salaried incentives used.

Data on oral health care costs were difficult to find, which is surprising at time when health care costs in general and oral health care costs in particular are considered high and in need of much more professional and political attention (41). Of the total costs of dental care, the greatest part in the Nordic countries has been spent in the private sector (Denmark 75%, Norway 77%, Finland 60%, and Sweden 63%) (30). Oral health care systems need to be capable of coping with future challenges. Today, the elderly and persons belonging to various special need groups use dental services less than the young and the working aged adults although their treatment needs are greater. There is an obvious need to shift resources from the young to these groups.

ABSTRACT (DANSK)

Tandplejesystemer i de nordiske lande

Tandplejesystemerne i Danmark, Finland, Norge og Sverige har mange fælles træk. I alle fire lande er der både en offentlig og privat tandplejesektor. Der tilbydes vederlagsfri tandpleje til børn og unge overvejende i offentligt regi, mens muligheden for voksantandpleje i offentligt regi samt egenbetalingen varierer i de forskellige lande. Tandpleje hos privatpraktiserende tandlæger er det mest almindelige blandt voksne, og tilskud fra det offen-

tlige til tandpleje i privat praksis varierer fra land til land. Der er foretaget en del mindre justeringer af tandplejesystemerne i de nordiske lande, men bortset fra Island så er der ikke sket større og fundamentale ændringer siden 1970'erne. Det store behandlingsbehov, man i tidligere tider så hos børn, er nu flyttet over til den ældre befolkning samt til befolkningsgrupper med særlig stor risiko for at få sygdomme. Den største udfordring i dag er at opfylde de to sidstnævnte gruppers behov for tandpleje.

Litteratur

- Widström E, Eaton KA. Oral health care systems in the Extended European Union. *Oral Health Prev Dent* 2004;2:155-94.
- ICELANDIC HEALTH INSURANCE. (Set 2015 juni). Tilgængelig fra: URL: www.sjukra.is/english
- STATISTISK SENTRALBYRÅ. Tannhelsetenesta, nøkkeltal 2013. (Set 2015 juni). Tilgængelig fra: URL: www.ssb.no/helse/statistikk/tannhelse
- SUNDHEDSSTYRELSEN. Tandplejeprognose, udbuddet af personale i tandplejen 2013-2035. (Set 2015 juni). Tilgængelig fra: URL: https://sundhedsstyrelsen.dk/publ/Publ2013/12dec/Tandplejeprognose2013_2035.pdf
- Widström E. Suun terveydenhoito. In: *Peruspalvelujen tila II*. Helsinki: Valtionvarainministeriö, 2014. (Set 2015 juni). Tilgængelig fra: URL: https://www.2014.vu.fi/vm/fi/04_julkaisut_ja_asiakirjat/01_julkaisut/03_kunna
- SOCIALSTYRELSEN. Nationella planeringsstödet 2013 – tillgång och efterfrågan på vissa personalgrupper inom hälso- och sjukvård samt tandvård. (Set 2015 juni). Tilgængelig fra: URL: <http://www.socialstyrelsen.se/Lists/Artikelkatalog/Attachments/18961/2013-1-18.pdf>
- Petersen PE, Ekholm O, Jürgensen N. Overvågning af voksenbefolkningens tandstatus og tandlægebesøg i Danmark. *Tandlægebladet* 2010;114:480-91.
- MINISTERIET FOR SUNDHED OG FOREBYGGELSE. Rapport om serviceeftersyn af sundhedslovens krav til indholdet af omsorgstændplejen. (Set 2015 juni). Tilgængelig fra: URL: http://www.sum.dk/Aktuelt/Publicationer/~media/Filer%20-%20Publikationer_i_pdf/2014/Serviceeftersyn-af-aeldreplejen-tand-marts-2014/Rap-om-serviceeftersyn-sundhedslovens-krav-omsorgstændplejen.ashx
- Widström E, Komu M, Mikkola H. Longitudinal register study of attendance frequencies in public and private dental services in Finland. *Community Dent Health* 2013;30:143-8.
- Sveinsdóttir EG, Wang NJ. Dentists' views on the effects of changing economic conditions on dental services provided for children and adolescents in Iceland. *Commun Dent Health* 2014;31:219-23.
- Althingi. Written reply from the Minister of Health to questions from a congressman regarding the insurance contract on dental care of children. Reykjavik 31.10.2014. <http://althingi.is/altxt/144/s/0429.html>
- Holst D, Grytten J, Skau I. Den voksne befolkningens bruk av

- tannhelsetjenester i Norge i 2004. *Nor Tannlegeforen Tid* 2005;115:212-6.
13. SOCIALDEPARTEMENTET. Friskare tänder till rimliga kostnader. (Set 2015 juni). Tilgængelig fra: URL: <http://www.regeringen.se/rattsdokument/statens-offentliga-utredningar/2007/03/sou-200719/>
 14. Suominen-Taipale L, Nordblad A, Vehkalahti et al., eds. Oral health in the Finnish adult population. Health 2000 Survey. KTL B25. Helsinki: Hakapaino Oy, 2008.
 15. Henriksen BM, Axéll T, Laake K. Geographic differences in tooth loss and denture-wearing among the elderly in Norway. *Commun Dent Oral Epidemiol* 2003;31:403-11.
 16. Gudlaugsson JO. The National Health Survey Iceland. Reykjavik: The Public Health Institute of Iceland, 2007.
 17. Hugoson A, Koch G, Göthberg C et al. Oral health of individuals aged 3-80 years in Jönköping, Sweden during 30 years (1973-2003). I. Review of findings on dental care habits and knowledge of oral health. *Swed Dent J* 2005;29:125-38.
 18. SOCIALSTYRELSEN. Tandhålsregistret. (Set 2015 juni). Tilgængelig fra: URL: <http://www.socialstyrelsen.se/register>
 19. Lundegren N. Oral health and self-perceived oral treatment need of adults in Sweden. *Swed Dent J Supp* 2012(223):10-76.
 20. ØKONOMI OG INDENRIGSMINISTERIET. De kommunale og regionale budgetter 2013. (Set 2015 juni). Tilgængelig fra: URL: <http://oim.dk/media/483907/De%20kommunale%20og%20regionale%20budgetter%202013.pdf>
 21. Holt C. Privat Praksis – Status og udvikling frem til 2012. København: Tandlægeforeningen, 2014.
 22. SYGEFORSIKRING “DANMARK”. Årsrapport 2013. København, 2013.
 23. National Institute of Health and Welfare (THL). Health expenditure and financing 2013. (Set 2015 juni). Tilgængelig fra: URL: <http://urn.fi/URN:NBN:fi-fe201503191962>
 24. STATISTICS ICELAND. Oral health care costs. (Set 2015 juni). Tilgængelig fra: URL: www.hagstofa.is
 25. Ministry of Finance Iceland. Public expenses for dental care. Tilgængelig fra: URL: <http://hamar.stjr.is>
 26. HELSE DIREKTORATET. Folketrygdens utgifter til tandbehandling i 2013 og prognoser for 2014. (Set 2015 juni). Tilgængelig fra: URL: www.helsedirektoratet.no/statistikk-og-analyse/tannhelsestatistikk
 27. SVERIGES KOMMUNER OCH LANDSTING. Uppföljning av landstingens särskilda tandvårdsstöd år 2013. (Set 2015 juni). Tilgængelig fra: URL: <http://skl.se/tjanster/omwebbplatsen/sok.23.html?q=Uppf%C3%B6ljning+av+landstingens+s%C3%A4rskilda+tandv%C3%A5rdsst%C3%B6d+2013&submitButton.x=0&submitButton.y=0>
 28. STATISTICS SWEDEN. Systems of Health accounts. Tilgængelig fra: URL: www.scb.se/en
 29. TANDVÅRDS- OCH LÅKEMEDLSFÖRMÅNSVERKET TLV. Nulägesbeskrivning av det statliga tandvårdsstödet. (Set 2015 juni). Tilgængelig fra: URL: www.tlv.se
 30. HELSE DIREKTORATET. Quality indicators in oral health care: a Nordic project. (Set 2015 juni). Tilgængelig fra: URL: <https://helsedirektoratet.no/publikasjoner/quality-indicators-in-oral-health-care-a-nordic-project-proceedings-in-2012>
 31. FOLKTANDVÅRDEN I SVERIGE. Frisk tandvården. Tilgængelig fra: URL: www.folktandvarden.se
 32. Holst D. Delivery of oral health care: In the Nordic countries. In: Pine CM, ed. *Community Oral Health*. Oxford: Wright 1997;283-91.
 33. Green-Pedersen C. New Public Management Reforms of the Danish and Swedish Welfare States: The Role of Different Social Democratic Responses. *Governance* 2002;15:271-94.
 34. Downer MC, Drugan CS, Blinkhorn AS. Salaried services in the delivery of dental care in Western industrialized countries: implications for the National Health Service in England. *Int Dent J* 2006;56:7-16.
 35. Widström E, Väisänen A, Mikkola H. Pricing and competition in the private dental market. *Community Dent Health* 2011; 28:123-7.
 36. Kjöllér M, Rasmussen NK. Sundhed og sygelighed i Danmark 2000 og udviklingen siden 1987. København: Statens Institut for Folkesundhed 2002.
 37. COUNCIL OF EUROPEAN CHIEF DENTAL OFFICERS. Oral Health Database. (Set 2015 juni). Tilgængelig fra: URL: www.cecd.org
 38. SVERIGES FOLKTANDVÅRDSFÖRENING. Svenskt kvalitetsregister för karies och parodontit, SkaPa. (Set 2015 juni). Tilgængelig fra: URL: www.skapareg.se/publikationer
 39. EYENET SWEDEN. Associated registries. NQRDI National Quality Register of Dental Implants (NQRDI). (Set 2015 juni). Tilgængelig fra: URL: www.nqrdi.se
 40. Widström E, Ekqvist M, Linden J et al. Treatment provided in the Public Dental Service in Finland in 2009. *Community Dent Health* 2015;32:60-4.
 41. PLATFORM FOR BETTER ORAL HEALTH IN EUROPE. (Set 2015 juni). Tilgængelig fra: URL: www.oralhealthplatform.eu



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