RAIMO PÄLVÄRINNE

CONSIDERATIONS ON SWEDISH DENTAL CARE

CONSIDERATIONS ON SWEDISH DENTAL CARE

© Copyright: Raimo Pälvärinne 2019
Photographer: Ann-Marie Pälvärinne
ISBN 978-91-7877-037-3 (print)
ISBN 978-91-7877-038-0 (pdf)
ISSN 1650-6065
DOI 10.24834/isbn.9789178770380
Printed by: Holmbergs, Malmö 2019

RAIMO PÄLVÄRINNE

CONSIDERATIONS ON SWEDISH DENTAL CARE

– from leadership to patient satisfaction

Malmö universitet, 2019
Faculty of Odontology
Department of Oral Diagnostics

This publication is also available online,
see: www.mau.se/muep

To my dear wife, Ann-Marie, my main supervisor, Eeva Widström,
and co-supervisors, Björn Axtelius and Sigvard Åkerman
Last but not least, my devoted mentor, Dowen Birkhed

CONTENTS

PREFACE	9
ABSTRACT	10
SAMMANFATTNING.....	12
INTRODUCTION	14
Leadership	14
Leadership theories in the nineteenth century	14
More modern leadership theories	15
Leadership and management.....	15
Management by Objectives (MBO) and Management by Wandering Around (MBWA)	17
New public management (NPM).....	18
Competition	19
Health-care and oral health-care provision system in Sweden.....	20
Dental reforms 1974-2008.....	22
Dental reform 2008.....	23
The effect of these reforms.....	23
Oral health and the use of oral health-care services.....	24
AIMS	27
MATERIALS AND METHODS	28
Paper I	28
Paper II	29
Statistical methods	29

RESULTS	30
Paper I	30
Visions and overall strategies	30
Short-term goals.....	31
Personal actions in realising goals.....	32
Personal leadership	32
Competition with the private sector	33
Paper II	33
Baseline	33
Twenty years later.....	35
DISCUSSION	41
Discussion Paper I	44
Discussion Paper II	46
CONCLUSIONS	49
ACKNOWLEDGEMENTS	50
REFERENCES	51
PAPERS	57
APPENDIX	79

PREFACE

This thesis is based on two papers, which will be referred to in the text by their Roman numerals:

- I. Pälvärinne R, Birkhed D, Widström E. The Public Dental Service in Sweden: An Interview Study of Chief Dental Officers. *J Int Soc Prev Community Dent.* 2018;8:205-211.
- II. Pälvärinne R, Birkhed D, Forsberg B, Widström E. Visitors' experiences of public and private dental care in Sweden 1992-2012. *BDJ Open* (2019) 5:12 ; <https://doi.org/10.1038/s41405-019-0020-1>

Appendix:

Questionnaire paper II, in Swedish.

Reprints made with permission from the publishers.

ABSTRACT

The thesis consists of two papers which are based on a research project called ‘Considerations on Swedish Dental Care’. The aims of the project were to analyse the characteristics of leadership in the public dental service (PDS) in Sweden (Paper I) and to study and describe patients’ opinions of dental care provided by the PDS and in private dentistry (Paper II).

The aim of the first study was to investigate how experienced chief dental officers (CDOs) in the PDS managed to maintain a market position at a time of social change and increased competition from a changing private sector. The CDOs, who have held a leading position for at least five years, were asked to participate in the study. An empirical study with a qualitative design was conducted. Data from 16 CDOs were collected in September-October 2014, with a 75% response rate.

The aim of the second study was to investigate adults’ experiences and opinions of the dental care they have received over time from being 50 years old to 70 years old. Patients’ dental visiting patterns, satisfaction with care and oral health measured as numbers of teeth were compared between the two care-provision sectors, public and private. In addition, a follow-up was conducted among those who claimed to have visited only the public sector or the private sector and those who claimed to have used both sectors during the whole study period.

Both studies may be of wider interest when examining Swedish dentistry:

- a) there are no studies of the characteristics of the top leadership in the Swedish PDS. The PDS in Sweden differs a great deal from the PDS in other countries, as it covers much more of the market and accounts for almost 45% of the total oral health-care market in Sweden;
- b) there are no previous studies in Sweden, where a comparison of patients' opinions of care in the two sectors of care providers in Sweden is made in this way.

The findings in Paper I underscore the fact that CDOs in the PDS exert a great deal of effort to consolidate the actual market position. The PDS is also “open” to patients of all kinds, not only to children, adolescents and special needs groups, and it also offers specialist care, which is unusual in many other countries.

Paper II shows that patients who visited the PDS had a slightly poorer dental status, compared with the private patients. Both groups lost teeth during a 20-year period and almost at the same level. Although CDOs in the first study focused on maintaining a strong market position, the patients in the second study reported greater satisfaction and a more frequent visiting pattern in private dental care compared with the PDS.

To summarise, this thesis aims to illustrate the spirit of the top management in the Swedish PDS and to explore adult patients' opinions and experience of care in the two provider sectors in Swedish oral health care.

SAMMANFATTNING

Avhandlingen består av två studier som bygger på ett forskningsprojekt som kallas "Betraktelser över svensk tandvård - från ledarskap till patientnöjdhet". Syftet med projektet var att analysera karaktären av ledarskap i Folktandvården i Sverige (Delarbete I), samt undersöka och beskriva vuxna patienters åsikter om erhållen tandvård i Folktandvården och i privat tandvård (Delarbete II).

Syftet med den första studien var att undersöka hur erfarna tandvårdschefer i Folktandvården lyckades behålla en marknadsposition i en tid av sociala förändringar och ökad konkurrens av en privat sektor i förändring. Tandvårdschefer som har haft en ledande ställning i minst fem år, blev ombedda att delta i studien. En empirisk studie av kvalitativ design genomfördes. Uppgifter från 16 tandvårdschefer insamlades i september-oktober 2014, med en svarsfrekvens på 75%.

Syftet med den andra studien var att undersöka vuxnas erfarenheter och åsikter om den tandvård som de fått under tiden från 50 år till 70 år. Patienternas besöksmönster, tillfredsställelse med vård och oral hälsa, mätt som antal tänder jämfördes mellan de två vårdsektorerna (offentlig och privat). Dessutom genomfördes en longitudinell uppföljning bland dem som uppgav att de endast hade besökt den offentliga sektorn eller den privata sektorn och de som svarade att de hade använt båda sektorerna under studieperioden.

Båda studierna kan ha ett stort intresse när man studerar svensk tandvård:

- a) det finns inga tidigare studier av ledarskapets karaktär på högsta nivå i Folktandvården. Den offentliga tandvården i Sverige skiljer sig mycket från offentlig tandvård i andra länder. Folktandvården täcker mycket mer av marknaden och står för nästan 45 procent av den totala tandvårdsmarknaden i Sverige.
- b) det finns inga tidigare studier i Sverige där en jämförelse har gjorts mellan patientens åsikt om vården i båda sektorerna av vårdgivare på detta sätt.

Resultaten i delarbete I understryker att tandvårdschefer i Folktandvården lägger stor energi för att konsolidera den aktuella marknadspositionen. Folktandvården är också ”öppen” för alla typer av patienter, inte bara för barn, ungdomar och speciella patientgrupper, och erbjuder specialistvård vilket är ovanligt i många andra länder.

Delarbete II visar att patienter som besökte Folktandvården hade en något sämre tandstatus jämfört med de privata patienterna. Båda grupperna förlorade tänder under en 20-årsperiod, och nästan på samma nivå. Även om tandvårdschefer i den första studien är inriktade på att behålla en stark marknadsposition, visar patienterna i den andra studien en större tillfredsställelse med vården och ett mer frekvent besöksmönster i den privata tandvården än i Folktandvården.

Sammanfattningsvis avser denna licentiatavhandling belysa tandvårdschefers ledningsfilosofi i den svenska Folktandvården och utforska vuxna patienters uppfattning och erfarenhet av vård hos de båda aktörerna inom den svenska tandvården.

INTRODUCTION

Leadership

The first paper (Paper I) analysed and discussed the characteristics of the leadership given by the chief dental officers (CDOs). There are many definitions of leadership. Here is one example from the Chinese general, Sun Tzu (Sun Tzu 540-496 B.C., translation 1988):

Leadership is a matter of intelligence, trustworthiness, humane-ness, courage, and discipline ... Reliance on intelligence alone results in rebelliousness. Exercise of humaneness alone results in weakness. Fixation on trust results in folly. Dependence on the strength of courage results in violence. Excessive discipline and sternness in command result in cruelty. When one has all five virtues together, each appropriate to its function, then one can be a leader’.

Leadership theories in the nineteenth century

Some works in the 19th century explored the “trait theory”. The writings of Thomas Carlyle and Francis Galton have influenced decades of research. In *On Heroes, Hero Worship, & the Heroic in History* (Carlyle 1841), Carlyle identified the talents, skills and physical characteristics of men who rose to power. The trait theory of leadership is an early assumption that leaders are born and, based on this belief, those that possess the correct qualities and traits are better suited to leadership. The “Great Man Theory” includes men such as Napoleon, Lincoln and Gandhi.

Galton's Hereditary Genius (Bramwell 1948) examined leadership qualities in the families of powerful men. Galton concluded that leadership was inherited and leaders were born not developed. Both of these notable works lent great initial support to the notion that leadership is rooted in the characteristics of a leader. Cecil Rhodes (1853-1902) believed that public-spirited leadership could be developed by identifying young people with 'moral force of character and instincts to lead' and educating them in a context which further developed these characteristics. International networks of these leaders could help to promote international understanding and help 'render war impossible' (Markwell 2013). This vision of leadership underlay the creation of the 'Rhodes Scholarships' in 1902.

More modern leadership theories

In the late 1940s and early 1950s, qualitative reviews of earlier studies made researchers (e.g. Stogdill 1948, Mann 1959) take a clearly different view of the driving forces behind leadership. In reviewing current literature, Stogdill and Mann found that some traits were common across a number of studies. The overall evidence suggested that persons who are leaders in one situation may not necessarily be leaders in other situations. Subsequently, leadership was no longer characterised as an inherent individual trait. The focus then shifted away from traits of leaders to an investigation of the leadership behaviours that were effective. This approach dominated much of the leadership theory and research for the next few decades.

Leadership and management

While leadership appears to rest on behaviour, management is often defined as a way to co-ordinate the activities of a business/organisation in order to achieve defined objectives. One of the modern management theories originates from Henri Fayol (1841-1925), who thought that management consisted of six functions:

1. forecasting
2. planning
3. organising
4. commanding
5. co-ordinating
6. controlling

All these functions helped in directing an organisation to achieve planned objectives. Fayol was a French mining engineer, mining executive, author and director of mines who developed a general theory of business administration that is often called 'Fayolism' (Wren et al. 2001).

Leadership and management must go hand in hand. They are not the same thing, but they are necessarily linked and complementary. Any effort to separate the two is likely to cause more problems than it solves.

In spite of this, a great deal of ink has been spent delineating the differences. The manager's job is to plan, organise and co-ordinate. The leader's job is to inspire and motivate. In his 1989 book, *On Becoming a Leader*, Warren Bennis composed a list of the differences.

The manager focuses on systems and structure; the leader focuses on people.

The manager relies on control; the leader inspires trust.

The manager has a short-range view; the leader has a long-range perspective.

The manager asks how and when; the leader asks what and why.

The manager has his or her eye always on the bottom line; the leader's eye is on the horizon.

The manager imitates; the leader originates.

The manager accepts the status quo; the leader challenges it.

The manager is the classic good soldier; the leader is his or her own person.

The manager does things right; the leader does the right thing.

Perhaps there was a time when the calling of the manager and that of the leader could be separated. However, in the new way of organising, management and leadership are not easily separated. Managers must organise workers, not just to maximise efficiency but also to develop talent and inspire skills and results.

The late management guru, Peter Drucker (1993), was one of the first to recognise this truth, as he was to recognise so many other management truths. He identified the emergence of the “knowledge worker” and the profound differences this would cause in the way business was organised.

With the rise of the knowledge worker, “one does not ‘manage’ people”, Mr. Drucker wrote. “The task is to lead people.”

According to Peter Drucker, the basic task of management also includes both marketing and innovation. His writings have predicted many of the major developments in the late twentieth century, including privatisation and decentralisation. He also invented the concept known as ‘management by objectives’. He is widely known as the father of modern management.

Management by Objectives (MBO) and Management by Wandering Around (MBWA)

Management by Objectives was first described by Peter Drucker in *The Practice of Management* (Drucker 1954) and is a personnel management technique where managers and employees work together to set, record and monitor goals for a specific period of time. Organisational goals and planning flow top-down through the organisation and are translated into personal goals for organisational members (Cohen 2010). The technique became commonly used in the 1960s and is still in practice. The establishment of a management information system aims to compare actual performance and achievements with the defined objectives. Practitioners claim that the major benefits of MBO are that it improves employee motivation and commitment and allows for better communication between management and employees. However, a cited weakness of MBO is that it emphasises the setting of goals to attain objectives, rather than working on a systematic plan to do so. MBO had followers in the Balanced Score Card (BSC) and Total Quality Management (TQM) in the 1990s. MBO and the Balanced Score Card are management systems that align tangible objectives with an organisation’s vision. A comparison of the two management systems concludes that the philosophical intents and practical application of MBO and the Balanced Scorecard stem from similar precepts (Dinesh, Palmer 1998).

Management by Walking or Wandering Around (MBWA) appeared in the management literature in the 1980s. The first to describe the phenomenon to a broad audience were probably Peters & Waterman in 1982 in their bestseller *In Search of Excellence – Lessons from America’s Best-Run Companies*. MBWA is currently a widely adopted technique in hospitals, for example, which involves senior managers directly observing frontline work. However, few studies have rigorously examined its impact on organisational outcomes. In a study, Singer and Tucker (2015) examined an improvement programme based on MBWA, in which senior managers observe frontline employees and work with staff to resolve the issues. The study suggests overall “that senior managers’ physical presence in their organisations’ front lines was not helpful unless it enabled active problem solving”.

New public management (NPM)

New Public Management (NPM) is an approach to running public service organisations in a more ‘businesslike’ fashion and to improving their efficiency by using private sector management models. The term was first introduced by academics in the UK and Australia to describe approaches that were developed during the 1980s, which focus on customer service. NPM reformers experimented with using decentralised service delivery models. Key themes in NPM were ‘... financial control, value for money, increasing efficiency etc’. Some governments tried using quasi-market structures (created through political decisions and not having a common market attribute), so that the public sector would have to compete against the private sector and used private sector companies to deliver what were formerly public services (LeGrand, Bartlett 1993). NPM approaches have been used to reform the public sector, its policies and its programmes. NPM advocates claim that it is a more efficient and effective means of attaining the same outcome. In NPM, citizens are viewed as “customers” and public servants are viewed as public managers. Managers in an NPM paradigm may have greater discretion and freedom as to how they go about achieving the goals set for them. This NPM approach is contrasted with the traditional public administration model, in which institutional decision-making, policy-making and public service delivery are guided by regulations, legislation and administrative procedures.

Some of the ideas that are its main characteristics are competition, contract management and control. Contract management means the moment at which purchasers try to manage providers through different types of contract, specifying what providers will do and for which compensation. Follow-up involves the process whereby purchasers, with the aid of different instruments, measure the performance based on selected variables that should include both resource consumption and the quality of health-care services provided.

NPM has influenced the public organisations during the last few decades, not only in the UK and Australia but also in most welfare services in the Nordic countries. This includes dentistry in Sweden (Ordell 2011). In the early 1990s, the NPM philosophy led to the introduction of the ‘competition release’ (konkurrensutsättning) of dental care to children and adolescents (Kähkönen 2004) in the county councils. This dental care sector was previously a public monopoly. This was followed by transforming the traditional PDS into limited companies, called ‘County Council Limited Companies, CCLCs’ (Landstingsägda Aktiebolag) at the beginning of the 2000s. Both processes began in the Stockholm County Council. The abolition of a monopoly in child dental care was followed by all CCs in the coming decades, while the transformation of traditional PDS to CCLC alone was followed by four additional county councils.

There is some criticism of this development from the dental profession. Some people in the profession claim that the PDS has failed to convince or engage committed, professional dentists in its eagerness to develop a new management model. Some authors claim that the traditional autonomous role of professionals is challenged in NPM reforms (Hjalms 2006, Sehested 2002).

Competition

Dentistry is free to children and adolescents up to 23 years of age in Sweden (Vårdguiden, 1177). It is handled by a quasi-market model with purchasers and providers, as mentioned above. The purpose of Paper II is to describe the dental care system that deals with dentistry for adults. For this reason, the quasi-market model is not discussed in more detail.

In the classic economic theory, the importance of competition is emphasised in order for producers to adapt to the needs of consumers. Adam Smith pointed out that “it is the free competition that drives the baker to bake a good bread, the butcher to produce good meat and the brewer to brew a strong beer; for it is the competition that does that only the best producers survive and provide consumers with what they want” (Sveriges Riksdag 2000). In theory, free competition leads to socio-economic efficiency. Competition is generally a contest or rivalry between two individuals or groups for territory, resources, leadership and profit, for example. It arises whenever at least two parties strive for a goal which cannot be shared, where one’s gain is the other’s loss (Smith, Ferrier and Ndofofor 2001).

Health-care and oral health-care provision system in Sweden

Responsibility for the tax-financed general health-care services in Sweden rests primarily with the counties/regions, which are 21 geographically defined areas. Each county/region is governed by a council, to which members are elected every four years in general elections. The council is responsible for the political steering of the total health-care system in its county/region. The councils decide on the level of county tax and how resources are allocated to the different areas of health care. The primary source of income is a county tax. Services are delivered through primary care centres, hospitals with specialised services at secondary level and then university hospitals. In parallel to this, there are also private specialist doctors providing services, usually under contracts with the county council/region (Pälvärinne et al. 2018).

Like the other Nordic countries, Sweden has a dual model for oral health-care provision. There is a PDS with salaried personnel and a private sector. The government plays a central role in guidance and supervision (Widström, Eaton 2004).

Since 1938, the county councils in Sweden have been responsible for organising public dental services in the whole country. They are primarily delivered by the PDS. The PDS caters for children and adolescents who have free care up to 23 years of age. Most adults

pay fees set by the county. Patients belonging to special needs groups may have special arrangements. Of the 7,777 (2014) clinically active dentists (equal numbers of men and women), 4,156 work in the public sector and 3,400 in the private sector. About 5% are occupied in education and administration (Socialstyrelsen 2015). The county councils are responsible for arranging specialist dental treatment for the whole population. There were 885 specialist dentists in Sweden in 2014. Specialist services can be contracted out to the private sector, but the largest part of specialist care is provided at the PDS clinics. The PDS is run in large organisations with several hundred to over two thousand employees. It is organised on two or three management levels, sometimes up to four.

The Swedish adult dental care is characterised by a competitive situation. The two largest players comprise PDS, 30%, and Praktikertjänst, 26%, followed by a number of smaller players with individual percentages of 1-16% (measured in health-care provider prices in 2015). Overall, private dental care is the largest, with 59% of the market measured in a number of measures. The profitability of dental care is relatively high, compared with other players in “health and care”. The average profit margin for limited liability companies in dental care products was 11% between 2013 and 2016 (Konkurrensvetket 2018). Historically, private dentistry in Sweden has been operated from small practices owned and run by one dentist, but nowadays group practices are more usual. The advent of the state dental insurance for adults in 1974 created a need for administrative support and business management for private dentists. This led to the creation of ‘the new Praktikertjänst’ in 1977 – a company owned by dentists and doctors working within it and with a structure like a producer co-operative. Slightly fewer than 50% of private dentists are today associated with Praktikertjänst, which is the largest private company in dentistry, with 16 per cent of the total market measured in turnover (Privat tandläkarna 2019). There is a certain tendency for sole proprietorships in private dental care to disappear. This may be because dentists who work alone have more difficulty competing with larger receptions, as the rapid technological development in dental care requires relatively large investments in new technology, such as digital and panoramic X-ray. Despite this, the private dental

clinics are still distinctly small business enterprises. Although the proportion of patients going to one of the dental chains is increasing, 46% of the dental care companies have annual sales of up to 3 MSEK and 68% have up to only three employees (Konkurrensverket, 2018). ‘City Dental’ (estab. 1995) was the first company owned by venture capitalists offering discount care and customer-friendly opening hours (Pälvärinne et al. 2018). Later, a company called ‘Colosseum Smile’ (estab. 2014) was established in the Nordic countries, Sweden, Denmark and Norway. More companies, owned by individual entrepreneurs, were established and formed group practices like MyDentist (estab. 2016) and Happident (estab. 2018). The latter new dental chains are mainly established in large and medium-sized cities. They have employed staff and are mainly active in general dental care. Some also offer specialist dental care. In Sweden, most public employers have banned their employees from working in private dental care in addition to their regular employment, for reasons of competition.

Dental reforms 1974-2008

In 1974, the first general dental insurance in Sweden came into force. After decades of discussions and investigations, the state government was able to agree with the dental organisation on how a policy for all citizens would work. A starting point for a dental reform was that there were major differences regarding the demand for dental care by different groups in society. One wanted to make the whole of dental care available to everyone. A general dental insurance would cover all adult Swedes and the prices would be the same at the private dental practitioner and public health care (Koch 2014).

However, the government’s expenses for dental care increased rapidly. They doubled between 1974 and 1980. To counteract this, patients gradually paid an increasing share of dental care costs. A new dental reform came into force on 1 January 1999. The intention was that dental care, which includes everyone from 20 years of age, would provide financial support for the so-called ‘basic dental care’ and a certain, but very limited, support for prosthetic measures (crowns, bridges, implants and so on). The purpose was to provide financial support to prevent future major dental needs. However, this design

for dental care led to high costs for those in need of extensive prosthetic measures. This was especially true among older people. As a result, the regulations were changed on 1 July 2002 for patients 65 years of age or older. A high-cost protection for prosthetic treatment was introduced. The reform that came in 1999 also introduced an opportunity to offer 'contract dental care'. In connection with the 1999 reform, the previous price regulation of dental care also ceased and prices were free (Statens Offentliga Utredningar; SOU 1998:2). A further aim of this reform was to increase competition and thus lower patient prices for dental care. One could say that this was the beginning of a competitive situation on equal terms between private dentistry and the PDS, although there are still other perceptions of this. The Swedish Competition Authority (Konkurrensverket) feels, for example, that: ‘

Free pricing has enabled the County Councils to fund adult care without subsidies with taxation, and care providers have had room for necessary investments and skills development. The reform may, to that extent, be regarded as positive. Nonetheless, there is reason to assume that there are still subsidies that are not insignificant. And there are still competition problems that should be solved to make the market work well (Konkurrensverket 2004).

Dental reform 2008

Sweden's government implemented a new dental reform on 1 July 2008. The purpose of the reform was to extend the prevention of dental care to provide dental care at a reasonable cost for people with large-scale dental needs. The government therefore introduced a 'General Dental Contribution' (Allmänna TandvårdsBidraget, ATB) to increase the frequency of visits and high-cost protection to reduce the financial barriers for people with large-scale dental needs to receive the dental care they need.

The effect of these reforms

The Dental Care Act (Tandvårdslagen 1985) states that the overall goals for dental care should be good dental health and dental care on equal terms for the entire population. The Swedish National Audit

Office, NAO (Riksrevisionsverket 2008), has examined whether the government's target for the dental reform implemented in 2008 has been achieved and whether the government's efforts were effective in achieving the goals.

The NAO's overall conclusion was that the frequency of visits had not increased to the extent that the government had hoped and it is doubtful whether the high-cost protection reaches all the patients who have large-scale dental needs. One explanation of why the objectives of the reform have not yet been achieved is that one large part of the population does not know about either the high-cost protection or the general dental care allowance (ATB).

Oral health and the use of oral health-care services

In Sweden, 85-95% of children and young people (3-21 years) are seen by the PDS, while the rest are seen by private dentists (Widström et. al. 2015). The mean DMFT-index values among the young are low; in 2010, the national mean DMFT index for 12-year-olds was 0.8 (Socialstyrelsen 2018) and it is still at the same level.

The Swedish adult population can be roughly divided into different generations based on dental health. The 20- to 39-year age group is dominated by individuals with virtually all their teeth remaining. They have no or only a few repairs and good periodontal conditions and can be called the "Fluoride Generation". In comparison, the 40- to 59-year age group has fewer teeth, more fillings and more endodontic treatment, as well as crown-bridge prosthetics, on average. This group can be called the "Filling Generation". The oral conditions then become worse in the group over the age of 60, so that the very oldest age groups consist of many individuals who lack all or most of their teeth and usually have removable tooth replacements or implants. This was the view in the Dental Care Investigation, 'Healthier teeth - at a reasonable cost' (Friskare tänder – till rimliga kostnader) (SOU 2007:19).

Recent register data showed that only 1.04-2.04% of those between 60 and 79 years of age were edentulous (Socialstyrelsen 2018) and a clinical study from Skåne in southern Sweden also showed that,

among elderly persons, removable dentures were rarely used to replace lost teeth and fixed prosthetic constructions were chosen instead (Lundegren 2012).

The dental health situation in the Swedish population in general is getting better and better. Cross-sectional studies in 30- to 80-year-olds have been carried out every ten years since 1973, the so-called 'Jönköping studies' (Hugoson et al. 2005). The frequency of edentulous individuals aged 40 to 70 years was 16, 12, 8, 1 and 0.3% in 1973, 1983, 1993, 2003 and 2013 respectively. During this 40-year period, the mean number of teeth in the 30- to 80-year age groups increased. In 2013, for example, nearly all 60-year-olds had complete natural dentitions. Both caries and periodontal diseases had also improved and the authors concluded that 'The continuous improvement in oral health and the reduced need for restorative treatment will seriously affect the provision of dental healthcare and dental delivery system in the near future' (Norderyd et. al. 2015).

At the end of the 1990s, the adult population's frequency of visits to dental care was estimated to be about 90% over a two-year period (SOU 1998: 2). Ten years later, it was found that about 85% of adults visit dental care every two years or more frequently. The frequency of visits was lowest among the 20- to 29-year age groups and the group 75 years or older (SOU 2007:19). The main objective of that investigation, which then became the basis for the 2008 Dental Reform, was to stimulate regular dental care visits, especially among the two groups with a lower frequency of visits and protection from high costs. The latest statistics show that, in 2019, 56 per cent of the adult population, aged 23 and older, visited dental care. This is a decrease of approximately seven per cent compared with 2011. The proportion who made a visit over a three-year period has decreased by approximately three per cent during the corresponding period, to 77 per cent. The figures include both planned and emergency visits.

In spite of this, Swedish researchers showed (Norderyd et al. 2015a) that an increase in the percentage of individuals treated by the Public Dental Service was seen in the total adult population up to 60 years of age during the period 1973-2013. Among 50- and 60-year-olds,

there was an increase in the number of individuals treated by the PDS between 2003 and 2013. The majority of the adults from 60 years of age were treated by private practitioners. In 2013, 10-20% of the individuals in the 30- to 40-year age groups did not regularly visit a dental clinic.

Another study, Moldius et al. (2008), found that the socioeconomic differences in the research group had a major impact on dental health. It was consequently felt that the results of the study supported the strategies of the 2008 dental reform to reduce social inequalities in dental health through increased equality in access to dental care.

Swedish National Audit Office, NAO (Riksrevisionsverket), on the other hand, is able to confirm that the patient's position as a dental consumer has not been strengthened. Because the price comparison service has not worked and since patients do not know that there are reference prices, they have no price information and thereby support for choosing dentists based on the price picture. There are indications that the dental reform goals are not being met. There are indications that the general dental care contribution has not led to increased visitor frequency and that high-cost protection does not cover all patients who are in great need (Swedish National Audit Office, NAO 2012).

Prices in adult care have risen sharply since price controls were lifted in 1999. Until December 2003, price increases, according to Statistics Sweden, were at least 55 per cent on average. Since 1999 the consumer price index has risen by seven per cent (Swedish Competition Authority 2004). The change in dental care prices of 55% can therefore be compared with changes in the general price level of 7%.

AIMS

The general aim of this thesis was to study Swedish dentistry at a time of changing political values and ideologies, leading to more market-oriented health care and oral health-care services and increased competition between care providers.

The specific aims were:

- I. to investigate how experienced Chief Dental Officers in the PDS managed to maintain a market position at a time of social change and increased competition from a changing private sector (Paper I)
- II. to investigate adults' experiences and opinions of the dental care they have received across time from being 50-year-olds to 70 years of age (Paper II).

MATERIALS AND METHODS

Paper I

A qualitative design was chosen to explore and describe views of leadership among CDOs in the PDS. This was done using a semi-structured telephone interview. Sixteen of the 22 CDOs (75%) participated. The questions were sent by e-mail before the telephone interviews, which were audiotaped, transcribed and analysed using qualitative content analysis. For the present study, a qualitative approach was chosen because of the small number of PDS organisations and CDOs and because of a lack of previous knowledge. The transcribed interviews were read and analysed to identify statements that represented perceptions of leadership. Statements relating to the same central meaning were grouped and sorted into categories (Graneheim, Lundman 2004).

The following five open questions were used in the interviews:

- 1) How would you describe the visions and overall strategies of your PDS organisation?
- 2) What are your own short-term goals?
- 3) How do you realise your goals – describe your personal actions?
- 4) How do you think your personal leadership has impacted your business and the position of your PDS organisation today?
- 5) How do you view the competitive situation with the private sector in the past, present and future?

Paper II

The second paper is a register study, using an existing database, based on a longitudinal series of questionnaires. The data emerged from a data collection at the beginning of 1992, including all 50-year-old residents ($n=8,888$) in the Counties of Östergötland and Örebro. They were sent a postal questionnaire relating to their 'experiences of dental care and experienced oral problems'. Basically the same questionnaire was sent to the cohort born in 1942 every five years until 2012. In 1992, the response rate was 71.4% ($n=6,343$), in 1997, 74.3% ($n=6,513$), in 2002, 75.0% ($n=6,372$), in 2007, 73.1% ($n=6,078$) and, in 2012, 72.2% ($n=5,697$).

This study focused on the following variables: frequency of dental visits, total costs for dental treatment paid for by the patients, satisfaction with the treatment and the number of own teeth remaining. The background factors were education, gender, marital status and country of birth.

Statistical methods

Chi-square tests were performed on differences between the PDS and private dentistry cohorts at baseline and in 2012. The chi-square test was also used to analyse changes in visiting patterns, number of teeth and satisfaction between 1992 and 2012 for patients who never changed dental-care provider group during the 20-year period. In order to further analyse the factors that might influence the odds of having 'all teeth left' after the 20-year follow-up, a logistic regression was performed. P-values below 0.05 were considered to be statistically significant.

RESULTS

Paper I

Visions and overall strategies

The visions presented by the Chief Dental Officers (CDOs) and Chief Executive Officers (CEOs) focused on organisational core values: oral health improvement, patient-centred dental care with good accessibility and the PDS having a strong market position with good finances.

The employees were included in the visions in most of the organisations, as well as the importance of teamwork with personal responsibility for each individual's share of total production.

The CDOs working in traditional PDS organisations and the CEOs in the CCLCs had different views of strategies. The CEOs talked more in terms of customers, business plans, market leader, gross margins and becoming the best dental company in the region. The CDOs, on the other hand, talked more about patients, care plans and the positive development of dental health.

The employees were regarded as a key factor in both the PDS and the CCLC. This was expressed as strategies for team development, strong employee influence and also becoming the most attractive employer in dentistry (Table 1).

Table 1. Keywords highlighted in ‘visions and strategies’

Visions	Strategies for implementation
A healthy mouth – for all	An oral health-care provision system built on availability and quality and adapted to patients’ needs and demands
Improvements in oral health	Care plans and business plans Health-oriented oral care using teamwork
Patient-centred care production	Easy access to care and satisfied customers
Good terms for the employees	Continuing skills development and career development (clinical, administrative) and team development Individually set salaries Employee influence at all levels
A strong market position for the organisation	Good working conditions, good dental equipment
The leading alternative/choice in oral health care in the county council	Non-profit dentistry working with prevention towards health for patients

Short-term goals

The short-term objectives were more ‘hands on’ and in the present. Most CDOs and CEOs mentioned customer satisfaction, easy access to care and increased numbers of customers as important objectives. Dedicated employees, good staffing and opportunities for continuous skills development were also highlighted. Economic efficiency and expectation of an increase in productivity was a recurring theme. In the PDS, the new capitation payment system, called ‘Frisktandvård’, a kind of contract care (Andrén Andås 2017), was seen as a ‘winning concept’, with a good opportunity to interest a large number of new clients/patients. A stable economy was mentioned as an important tool to develop the business. The CEOs focused more heavily than the CDOs on increasing the numbers of customers, profitability and profit margins.

Personal actions in realising goals

Nearly all the CDOs were convinced that one of the most important tools was to handle all issues and cases at the right level of management. Overall management issues should be handled at the top-management level, middle-management issues at clinic manager level and ‘floor questions’ by the affected employee. This meant that more operative questions were to be handled at middle-management level, while broad strategic issues were the responsibility of the CDOs and CEOs. This was the most common picture in large, hierarchical organisations, while managers in flatter, smaller organisations also acted at operative level together or instead of subordinate commanders. Many managers perceived a positive economic result as an important objective for their organisations, but some also mentioned pure economic output dimensions as a control model.

Personal leadership

Important issues at meetings at different levels in the organisation were core values of work and organisational culture. In both the PDS and CCLC, building further on the brand names of ‘Folktandvården’ (Public Dental Service) and ‘Frisktandvård’ (Contract Care) was considered to be crucial for market share size. One of the PDS organisations even gave a bonus to employees who successfully marketed the contract model. Some of the PDS managers did not feel that their personal leadership had influenced the actual market shares. Instead, markets grew on their own (Table 2).

Table 2. Personal leadership stressed in some keywords

Keywords	Activities
Skilled employees	A strong economy, which allows development
Visible leadership	Communicate the mission, short decision pathways. Management by walking around
Brand mark values	Preventive dentistry, contract care
Market success	PDS – the obvious choice for both patients and employees. Strong market shares in both dentistry for adults and paediatric dentistry
Customer orientation	Satisfied patients. No waiting lists. Appointments via the internet

Most CDOs and CEOs (81%) were convinced that their personal actions had had some influence, or even a great influence, on development. Their visibility and showing personal leadership in the organisation was regarded as important in maintaining or expanding market shares. This visibility could take the form of regular visits to clinics around the county. Dialogue about the commission with subordinate commanders and employees was important on these occasions. Some with a differing opinion pointed to other factors beyond their individual actions, such as directives or political decisions.

Competition with the private sector

There was no concern about competition. The strong market position of the PDS/CCLC compared with 'private' in paediatric dentistry is also an advantage in adult dentistry. The young individuals are still an important target group for success. Children grow up and become adults and remain in PDS care. Here, the introduction of the concept of 'Frisktvård' is seen as a success factor. Those respondents who expressed concern about competition were CEOs in regions with growing new private dental chains, offering both general and specialist dental care. Competition was mentioned in terms not only of patients but also of employees.

Paper II

Baseline

According to the oral-health situations at baseline, there were some notable differences between the two care sectors. The public visitors had visited their dental clinic more seldom than the private visitors and they were less satisfied with the care they had received ($p < 0.001$). PDS visitors had statistically significantly fewer of their own teeth than those who had visited private dentists ($p < 0.001$) and had even paid less for the treatment they had received ($p < 0.001$). At baseline, there were no statistically significant differences as regards gender or marital status, but the PDS visitors had a lower education ($p < 0.001$) and a larger proportion of them were born in countries other than Sweden (Table 3).

Table 3. Comparison of the 50-year-old respondents (baseline)

	<i>PDS</i>	<i>Private</i>	<i>Total</i>	<i>p-value</i>
<i>n</i>	1612	4471	6083	
<i>Frequency of visits during the last five-year period, n (%)</i>				<0.001
Every second year or more seldom	274 (17.0)	208 (4.7)	482 (7.9)	
Once a year	1039 (64.5)	2961 (66.2)	4000 (65.8)	
Twice a year or more often	296 (18.4)	1297 (29.0)	1593 (26.2)	
Missing	3 (0.2)	5 (0.1)	8 (0.1)	
<i>Number of teeth, n (%)</i>				<0.001
Edentulous or very few teeth left	76 (4.7)	70 (1.6)	146 (2.4)	
Missing a fairly large number of teeth	377 (23.4)	693 (15.5)	1070 (17.6)	
Missing a single tooth	855 (53.0)	2518 (56.3)	3373 (55.4)	
All teeth left	276 (17.1)	1081 (24.2)	1357 (22.3)	
Missing	28 (1.7)	109 (2.4)	137 (2.3)	
<i>Cost of care paid for by the patient during the last year, n (%)</i>				<0.001
Nothing	115 (7.1)	138 (3.1)	253 (4.2)	
Less than 300 SEK (£25.1)	400 (24.8)	1195 (26.7)	1595 (26.2)	
301-1,000 SEK (£25.2-83.8)	727 (45.1)	2097 (46.9)	2824 (46.4)	
More than 1,000 SEK (£83.8)	295 (18.3)	946 (21.2)	1241 (20.4)	
Missing	75 (4.7)	95 (2.1)	170 (2.8)	
<i>Satisfaction with care received, n (%)</i>				<0.001
Fairly or very dissatisfied	111 (6.9)	202 (4.5)	313 (5.1)	
Generally satisfied	792 (49.1)	1845 (41.3)	2637 (43.4)	
Very satisfied	681 (42.2)	2366 (52.9)	3047 (50.1)	
Missing	28 (1.7)	58 (1.3)	86 (1.4)	
<i>Gender = male, n (%)</i>	815 (50.6)	2197 (49.1)	3012 (49.5)	0.338
<i>Level of education, n (%)</i>				<0.001
No university degree	1288 (79.9)	3487 (78.0)	4775 (78.5)	
University degree	300 (18.6)	959 (21.4)	1259 (20.7)	
Missing	24 (1.5)	25 (0.6)	49 (0.8)	
<i>Marital status, n (%)</i>				0.098
Single	310 (19.2)	797 (17.8)	1107 (18.2)	
Married/cohabiting	1297 (80.5)	3669 (82.1)	4966 (81.6)	
Missing	5 (0.3)	5 (0.1)	10 (0.2)	
<i>Country of birth, n (%)</i>				<0.001
Sweden	1455 (90.3)	4248 (95.0)	5703 (93.8)	
Other Nordic country	72 (4.5)	102 (2.3)	174 (2.9)	
Other country	85 (5.3)	120 (2.7)	205 (3.4)	

Twenty years later

Twenty years later, the response rates to both sectors were almost the same as in 1992 (73.5/71.6% to private and 26.5/28.3% to PDS). The variable of ‘all teeth left’ had the same proportion in both sectors as in 1992 (Fig. 1). The public visitors had visited their dental clinic less frequently than the private visitors (Fig. 2) and they were less satisfied with the care they had received (Fig. 3).

Figures 1-3.

Most private patients (64.8%) claimed to have kept the same visiting frequency as in 1992 in contrast to 51.0% of the PDS visitors. A statistically significantly larger proportion (25.9%) of the latter group visited their dentist more seldom than earlier in contrast to 17.6% of the private visitors ($p < 0.001$; Table 5). Changes in numbers of teeth were fairly similar in both sectors. About 60% said they belonged to the same “numbers of teeth category” during the entire study period. About every fourth individual claimed to have fewer teeth and, interestingly, almost 10% had more teeth than initially. It also seemed that there was a difference in the costs of care paid, as the PDS visitors had paid less than the private sector visitors (Table 4). At baseline, there was a difference of approximately 20% of “very pleased” in favour of private dentistry. Over time, the private sector appeared to have maintained this position, while the PDS had decreased slightly.

The costs paid by the patients were difficult to compare over time, because of the many changes in the state subsidies during the 20-year study period and changes to the question of patient costs in the questionnaire. This study indicated that very few patients paid high costs, but significantly more private patients did so (Tables 4, 5).

Table 4. Comparison of the 70-year-old respondents

	<i>PDS</i>	<i>Private</i>	<i>Total</i>	<i>p-value</i>
<i>n</i>	1482	3738	5220	
<i>Frequency of visits during the last five-year period, n (%)</i>				<0.001
Every second year or more seldom	370 (25.0)	218 (5.8)	588 (11.3)	
Once a year	746 (50.3)	2432 (65.1)	3178 (60.9)	
Twice a year or more often	352 (23.8)	1072 (28.7)	1424 (27.3)	
Missing	14 (0.9)	16 (0.4)	30 (0.6)	
<i>Number of teeth, n (%)</i>				<0.001
Edentulous or very few teeth left	89 (6.0)	106 (2.8)	195 (3.7)	
Missing a fairly large number of teeth	392 (26.5)	730 (19.5)	1122 (21.5)	
Missing a single tooth	817 (55.1)	2284 (61.1)	3101 (59.4)	
All teeth left	141 (9.5)	530 (14.2)	671 (12.9)	
Missing	43 (2.9)	88 (2.4)	131 (2.5)	
<i>Cost of care paid by the patient during the last year, n (%)</i>				<0.001
Nothing	164 (11.1)	143 (3.8)	307 (5.9)	
1-2,000 SEK (£1-167.6)	745 (50.3)	2163 (57.9)	2908 (55.7)	
2,001-8,000 SEK (£167.7-670.5)	400 (27.0)	1065 (28.5)	1465 (28.1)	
More than 8,000 SEK (£670.5)	79 (5.3)	227 (6.1)	306 (5.9)	
Missing	94 (6.3)	140 (3.7)	234 (4.5)	
<i>Satisfaction with care received, n (%)</i>				<0.001
Fairly or very dissatisfied	121 (8.2)	136 (3.6)	257 (4.9)	
Generally satisfied	864 (58.3)	1637 (43.8)	2501 (47.9)	
Very satisfied	485 (32.7)	1949 (52.1)	2434 (46.6)	
Missing	12 (0.8)	16 (0.4)	28 (0.5)	
<i>Gender = male, n (%)</i>	748 (50.5)	1828 (48.9)	2576 (49.3)	0.311
<i>Level of education, n (%)</i>				<0.001
No university degree	1143 (77.1)	2687 (71.9)	3830 (73.4)	
University degree	330 (22.3)	1031 (27.6)	1361 (26.1)	
Missing	9 (0.6)	20 (0.5)	29 (0.6)	
<i>Marital status, n (%)</i>				<0.05
Single	379 (25.6)	830 (22.2)	1209 (23.2)	
Married/cohabiting	1049 (70.8)	2791 (74.7)	3840 (73.6)	
Missing	54 (3.6)	117 (3.1)	171 (3.3)	
<i>Country of birth, n (%)</i>				<0.05
Sweden	1370 (92.4)	3548 (94.9)	4918 (94.2)	
Other Nordic country	46 (3.1)	86 (2.3)	132 (2.5)	
Other country	62 (4.2)	97 (2.6)	159 (3.0)	
Missing	4 (0.3)	7 (0.2)	11 (0.2)	

There was also a group called “mixed”. Individuals belonging to this group had changed their care-provision sector during the period and/or not actively participated in every five-year follow-up (??). Individuals in this group had “fewer teeth in 2012” than individuals in the PDS and private groups. Their visiting frequency was midway between the PDS and private visitors, as was their satisfaction level (Table 5).

Follow-up after 20 years of the group with “all teeth left and/or missing a single tooth” revealed some interesting findings (Table 6). The results compared with 1992 showed, for example, that university-educated individuals have 46% higher odds and private patients have 30% higher odds of having all their teeth left after 20 years. Married people had 19% higher odds than unmarried people. Men had 14% higher odds than women of keeping their natural teeth. The results in this study also showed that individuals born outside Sweden had lower odds (16-17%) of keeping all or most of their teeth than native Swedes.

Table 5. Changes in visiting patterns, numbers of teeth and satisfaction with care received during the 20 years from 1992 to 2012 by treatment sector. Respondents who changed treatment sector during the study period are included in the mixed group

	<i>Mixed</i>	<i>PDS</i>	<i>Private</i>	<i>Total</i>	<i>p-value</i>
<i>n</i>	861	649	2478	3988	
<i>Change in visiting pattern from 1992 to 2012, n (%)</i>					<0.001
Lower frequency in 2012	214 (24.9)	168 (25.9)	435 (17.6)	817 (20.5)	
Same frequency	467 (54.2)	331 (51.0)	1605 (64.8)	2403 (60.3)	
Higher frequency	174 (20.2)	142 (21.9)	432 (17.4)	748 (18.8)	
Missing	6 (0.7)	8 (1.2)	6 (0.2)	20 (0.5)	
<i>Changes in number of teeth from 1992 to 2012, n (%)</i>					0.098
Fewer teeth in 2012	259 (30.1)	158 (24.3)	646 (26.1)	1063 (26.7)	
Same number of teeth	507 (58.9)	418 (64.4)	1539 (62.1)	2464 (61.8)	
More teeth in 2012	53 (6.2)	49 (7.6)	190 (7.7)	292 (7.3)	
Missing	42 (4.9)	24 (3.7)	103 (4.2)	169 (4.2)	
<i>Change in satisfaction from 1992 to 2012, n (%)</i>					<0.05
Less satisfied in 2012	206 (23.9)	164 (25.3)	513 (20.7)	883 (22.1)	
Satisfied at the same level	479 (55.6)	378 (58.2)	1480 (59.7)	2337 (58.6)	
More satisfied in 2012	153 (17.8)	98 (15.1)	449 (18.1)	700 (17.6)	
Missing	23 (2.7)	9 (1.4)	36 (1.5)	68 (1.7)	

Table 6. Odds ratios from logistic regression analysis for the likelihood at the end of the study period of having “all teeth left or missing a single tooth”.

	<i>Estimate</i>	<i>Std. error</i>	<i>z-value</i>	<i>p-value</i>	<i>OR</i>	<i>Lower</i>	<i>Upper</i>
(Intercept)	1.402	0.210	6.677	0.000	4.064	2.716	6.192
University degree at baseline	0.377	0.159	2.368	0.018	1.458	1.074	2.006
Private dental care at baseline	0.259	0.161	1.612	0.107	1.296	0.939	1.766
Male	0.134	0.133	1.004	0.315	1.143	0.881	1.485
Married/cohabiting	0.176	0.167	1.053	0.292	1.192	0.853	1.643
Born in the Nordic countries	-0.180	0.548	-0.329	0.742	0.835	0.317	2.874
Born outside the Nordic countries	-0.160	0.490	-0.326	0.744	0.852	0.355	2.527

DISCUSSION

Initially, in the 1930s, the purpose of the PDS was that it should provide free dental care to children aged between three and 15 years and, depending on the extent of resources, to adults. Deficiencies in both the organisation of the PDS and the recruitment of dentists in combination with the war years' "baby boom" led to failures in the basic commitments. In 1943, a law was introduced that gave the Medical Board (Medicinalstyrelsen) the right to limit the credentials to apply only to service in public dental care during the first year of practice. Dental-care capacity was nevertheless limited. Malmö Dental College was opened in 1947 and financial scholarships were introduced for dentists who took up employment in the PDS. Between 1950 and 1955, staffing in the Public Dental Service doubled from 700 to 1,400. A maximum was reached in 1990, when just over 5,000 dentists had their main occupation in the PDS (Lindblom 2004). Later, a reorganisation was introduced in the patient work with dentists, dental hygienists and dental assistants in teams around the patient and the number of dentists decreased.

The obligations of the county councils and the PDS in Swedish dental care today can be found in the Dental Care Act.

Dental Care Act (1985: 125), including SFS 2018: 685.

'The County Council's responsibilities are as follows.

§ 5 Each county council shall offer good dental care to those who are resident within the county council.

§7 The PDS must provide

1. *regular and comprehensive dental care for persons up 23 years of age*
2. *specialist dental care for people from the year in which they turn 24*
3. *other dental care for persons from the year in which they reach the age of 24 to the extent that the county council considers appropriate (Law 2016: 1301).*

A county council may conclude an agreement with someone else to perform the tasks for which the county council and its PDS are responsible under this Act’.

The county councils’ planning responsibility must also relate to the dental care offered by someone other than the PDS, *e.g.* especially ensure that “outreach screening” is conducted in some elderly and disabled people. The County Council must also ensure that “necessary dental care” is offered to eligible patients and dental care to patients belonging to certain disease groups. This dental care need not (but can) be performed by the PDS, but it is usually purchased.

The formulations in the Dental Care Act make the conditions fairly complex. There is a law relating to what county councils and what the PDS are responsible for, in the original formulations. This original law has since been modified, so that everything that was originally statutory for the PDS could be contracted out in principle to private providers. However, this has not yet occurred and the likelihood that it will happen, despite radical changes in politics, is fairly small. Furthermore, to discuss this issue, the county council’s mission to provide good dental care to all residents within their area of responsibility would be almost impossible to realise, without political control of the geographical location of dental clinics.

In addition, there may be political concerns about discontinuing/privatising well-functioning public activities. The experience of these may not be so unambiguous in any direction. The competition that has so far been evaluated has had positive effects on economic efficiency in general. However, it appears from an overview by the

Swedish Competition Authority (2005) that there are large gaps in our knowledge of the economic efficiency in public versus private management, *e.g.* several of the presented studies are based on limited or inadequate data. The methodological problems include the question of whether it is the level of competition or ownership that affects the effectiveness of an activity. Overall, the studies presented in that report indicated that competition generally leads to greater economic efficiency, but the answer to the question of whether there are efficiency differences between private and public actors is not unambiguous.

The ‘Swedish dental subsidy systems and how dentistry has been treated politically are the results of a chain of events ranging from care for the population’s dental health, political doctrines, ‘zeitgeist’, dental policy, to state finances. The latest four dental care reforms do not clearly show what the main idea is, if there is one, regarding the state’s involvement in dentistry’ (Franzon et al., 2017). There appears to be a compromise between state level politicians and professional interest groups.

This study indicates that most patients were satisfied with the care they have had and probably have not been particularly interested in the care-provision system reforms. Some researchers also feel that political goals for care and dental care in particular can fluctuate significantly over time. They can range from the prevention of dental diseases to protection from high costs and political ideas can recur, despite science speaking against them (Ordell, Söderfeldt 2009).

At the same time, social changes in society continue. The population in urban areas continues to increase, while the rural population is almost unchanged. Urbanisation no longer takes place through major relocations from rural areas to cities. The urban areas are growing mainly through immigration and more newborn children. The population living in urban areas grew from 81 per cent in 1970 to 85 per cent in 2010, according to Statistics Sweden (Statistiska CentralByrån, SCB 2015).

Income differences in Sweden have never been greater, at least not since 1991, when SCB began measuring, according to recent statistics (SCB 2018).

The statistics for 2016 also show that the richest tenth are pulling away. The richest tenth has almost as much of the total disposable income as the half of the population with the lowest income. Sweden is the country in the western world where the difference between those who have the lowest income and the normal income earner has increased most since 1995. Sweden, which in 1995 topped the list of countries with the least income differences, is now in fourteenth place, making it an extremely ordinary country in the OECD circle with regard to the proportion of “relatively poor”.

Against this new background, it is a challenge for Swedish dental care, with today’s dental reform, to live up to what the Dental Care Act stipulates.

Obviously, there is a need for diversity in Swedish dental care and also for greater learning across organisational boundaries to handle these changes in society. Dental care is also in the midst of one of the greatest challenges ever, the great generational change among dental-care practitioners. To guarantee their attractiveness to both patients and employees, all the actors, not least the PDS, must pay more attention to lifestyle changes in society. One expression of this is something that some authors already described in 2007 that the patients were integrated into care, almost like an employee (Sandberg, Fors 2007).

Discussion Paper I

Regarding the leadership issue, the original aim of Paper I was to compare the management of public and private dental activities, but the obvious differences in organisation between public and private dental care in Sweden led to leadership analyses only being conducted in the PDS.

The method used here was a semi-structured qualitative telephone interview. Qualitative content analysis is commonly used for ana-

lysing qualitative data. Semi-structured interviews are the most used interviews and they take several different forms (Dicicco-Bloom, Crabtree 2006). The trustworthiness of the method depends on several phases from the preparation of the interview questions and data collection to reporting the results. Since the number of interviewees was relatively low ($n = 16$), the method provided opportunities to acquire a deeper knowledge compared with a questionnaire study. However, the method was labour intensive, even with few participants, with audio data for transcribing, processing themes and codes. The weakness of this method may be that the investigator was a former CDO. In defence of this, it can be argued that there was no dependent relationship between the interviewer and the respondent.

The results of the interviews are fairly interesting. The CDOs appear to focus most heavily on leadership in internal work with visions, strategies and goals. Quite a small part of the work is devoted to communicating this externally in competitor analysis and marketing, for example. The PDS organisations are pleased with their flagship, 'Frisktandvård', where there is an opportunity to retain a large proportion of the many paediatric patients who have previously been in the organisation. This may be the reason why there is not much competitor surveillance and marketing. The interviews were conducted in 2015 and new competing private dental-care companies have appeared since then. However, the CDOs did not appear to worry about this, even in 2015.

Another explanation may be that it is simply too difficult to handle all the already existing patients. Folktandvården today (and also in 2015) has difficulty staffing all the existing clinics with dentists. In northern Sweden, things have even gone so far that they have ceased their recall systems and only prioritise the care time available for paediatric dentistry, emergency care and contract care patients (Sveriges Radio 2017).

In many regions, a shift in recall occurs in months/years. Recalls can be postponed for several months, or from one year to two years. This happens in most cases without communication with affected patients. This accessibility problem is a difficult dilemma for many CDOs.

Above all, it is a pedagogic problem with patients who have been given a promise of recall, but a shift takes place fairly indefinitely. This problem area within the Public Dental Service is also evident in Paper II, where the visits to dental care are less frequent in the PDS compared with private dentistry. It may be due to planned risk grouping, but it may also depend on the lack of dentists/dental hygienists and failures in organising teamwork.

The leadership strategies that CDOs claimed to use are both classic ‘fayolistic’ methods, such as planning, with business plans and financial follow-up, but also with many ‘softer’ elements. They highlighted good working conditions with continuous competence and career development for the employees. As these strategies are internal, customer satisfaction appeared to be achieved through satisfied employees. The strategies also included communicating the company’s mission to employees and being visible in the business (MBWA).

Discussion Paper II

In Paper II, the response rate in the underlying questionnaire was considered to be on a high level, according to recent studies (Cook, Dickinson, Eccles 2009), but it is important to remember that respondents in longitudinal self-report surveys are exposed to a changing environment over time. They are also affected by changes in the dental-care compensation system, private financial changes, their own care-provider changes and the fact that they get older (Ekbäck, Ordell 2013). All these circumstances may influence their perspectives. This must be considered when interpreting the results. The questionnaire study is ongoing, with a new set of questions in 2017. The last year mentioned is not included in this study, because the results were published when Paper II was processed for publishing (Region Örebro län, Tandvårdsrapporter 2019). One interesting observation in Paper II (Fig. 1) was that patients in the PDS and private patients have similarly impaired dental health over time (measured as the number of teeth), but the odds ratio for having “all teeth left” is 30% higher in private dentistry, due to better entry values at the beginning of the study (Table 6). This is in spite of the fact that PDS patients rarely go and are more likely to receive fewer measures and pay less. Some researchers (Downer et al. 2006) state that salaried

dentistry can be costly in relation to *‘the volume of clinical activity produced’*, because salaried services foster a preventive approach to care. Everything depends on what is meant by ‘effective dental care’ and whether prevention and dental health are appreciated.

The “mixed” group gives rise to some questions. After all, they comprised more than 20% of the surveyed population. They had changed care sector one or more times during the investigation period. The group could thus consist of individuals who were dissatisfied with a treatment or a dentist and therefore changed care provider. It could also consist of individuals who do not want to be recalled but want to manage visits themselves. It certainly also included patients who had been referred to public specialist care or who used the PDS emergency services. It can also be seen that the “mixed group” consisted of individuals with the poorest dental health in this study (Table 5). This is in accordance with studies from other countries, showing that so-called heavy users of dental services had had emergency treatment and no proper examinations and preventive care, leading to a repetitive cycle of repair without the proper planning of comprehensive treatment (Nihtilä et al. 2016).

Regarding individuals’/patients’ experiences of the dental treatment they received, the Swedish Quality Index (Svenskt Kvalitets Index) has been conducting customer surveys in various sectors for 30 years. Of the industries the Swedish Quality Index annually measures, dental care in 2019 continues to have the most satisfied customers (followed by audit, 72.8, insurance, 72.3, and telecom, 69.7). With customer satisfaction of 79.2, the dental care industry enjoys an unprecedented first place.

The customers of private dentists (84.1) are more satisfied than the PDS customers (72.5). This is in accordance with the results in Paper II. The most satisfied customers of dental care in the SKI survey are over 60 years of age (84.5). According to the survey, the PDS is chosen for ‘proximity’, private dental care on ‘recommendation’. The private dentists are perceived as delivering a better customer experience and for being more ‘competent’, more ‘professional’.

What can this be due to? The traditional image of private dental care is that you meet the same well-known faces without marketing and receive frequent, regular recalls and care, with no waiting lists. Since most dentists today start their career in the PDS, those working in private dental care are also older and usually more experienced in the profession. The statistics show (Socialstyrelsen 2016) that the average age among occupational private dentists was 50.1 years, while it was 42.7 in the PDS. The PDS, on the other hand, is fairly similar in terms of security and has better geographical coverage all over the country.

The state dental support system currently consists of three steps. The first two were taken in 2008 in the form of the ‘General Dentistry Contribution’ (ATB) and the high-cost protection. The third step came in 2013 in the form of ‘a special support for people with illness or disability who have increased dental needs’.

Against the above description of the social situation in Sweden today, the government appears to have realised that the new support does not fulfil the desired aims. In March 2018, the government appointed a special investigator to lead an investigation into ‘A dental care system for equal dental health’. The investigation was tasked with looking at how to reduce the differences in dental health in the population. The investigation is due to submit its final report by 1 March 2020 at the latest (Regeringskansliet 2018).

How will the future look for Swedish dental care? Will there be an absolute dentist deficiency in 2023, as the then Swedish National Agency for Higher Education already predicted a few years ago, against the current rate of education and the retirements that have previously been touched upon here. Will the doubling of the number of dental hygienists since 1995 be able to contribute to the development of Swedish dental care to be “of good quality and available to the entire population within the respective county council area” (Dental Care Act), as well as providing equal dental health.

This remains to be seen, but it still seems obvious that CDOs take their assignments seriously, with the aim of meeting current and future needs, and that dental-care patients generally appear to appreciate regular dental care.

CONCLUSIONS

The main findings in this study were that the CDOs in charge of the management of the PDS in Sweden had handled a situation of increasing competition through brand building and core value work related to both patients and employees and less by using competitor analysis. A great deal of effort was put into consolidating/creating a strong market position for the PDS. Adult patients experienced some differences between the PDS and the private sector, *e.g.* a more frequent, regular visiting pattern and greater satisfaction with the private than the public sector. It was notable that the vast majority of the older adults had chosen the private sector. On the other hand, it is obvious that the PDS is in a strong position among the younger population and continues to cater for the majority of the young; their use of private services has remained at a low level.

The PDS organisations were keen on their flagship, contract care (Frisktandvård), which gives them the opportunity to retain a large proportion of the many children and youngsters as patients when they become adults.

ACKNOWLEDGEMENTS

There are many people to whom I owe a huge “THANK YOU” for their help during my trip to this thesis.

It is difficult to mention everyone without ever forgetting anyone. Thanks to everyone within the university world nationally and internationally, within county councils and regions, as well as personal friends who supported me when I started to doubt.

REFERENCES

- Andrén Andås C. A New Payment Model in Swedish Dental Care, available online at: <https://gupea.ub.gu.se/handle/2077/39557> (accessed June 2017).
- Bennis W. On becoming a leader. New York: Basic Books; 2009.
- Bramwell B.S. Galton's "hereditary genius"- and the three following generations since 1869. *Eugen Rev.* 1948;39:146-153.
- Carlyle T. On Heroes, Hero-worship, & the Heroic in History. New York: Appleton & Co; 1841.
- City Dental i Stockholm AB. Online available at: <https://www.citydental.se> (accessed 2019-04-01).
- Cohen W.A. Drucker on leadership. ISBN 978-0-470-40500-0. San Francisco, CA: Jossey-Bass; 2010.
- Colosseum Smile AB. Available online at: <https://www.smile.se/om-smile/> (accessed 2019-03-26).
- Cook JV, Dickinson HO, Eccles MP. Response rates in postal surveys of health care professionals between 1996 and 2005. *BMC Health Serv Res* 2009; 9:160. är artikeln bara på en sida?
- Dicicco-Bloom B, Crabtree BF. The qualitative research interview. *Med Educ* 2006;40:314-21.
- Dinesh D, Palmer E. Management by objectives and the Balanced Scorecard: will Rome fall again? *Management Decision.* 1998;36:363-369.
- Downer MC, Drugan CS, Blinkhorn AS. Salaried services in the delivery of dental care in Western industrialised countries: implications for the National Health Service in England. *Int Dent J.* 2006;56:7-16.
- Drucker P. The Practice of Management. New York: Harper; 1954.
- Drucker P. The rise of the knowledge society. *The Wilson Quarterly* 1993;17(2):52-. AcademicOneFile (accessed 2019-06-30).

- Eckbäck G, Ordell S. In Swedish: Munhälsa och tandvård, TE-studierna – befolkningsenkäter i Örebro och Östergötlands län (Oral Health and Dental Care, TE Studies – population surveys in Örebro and Östergötland County). Online available at: <https://www.regionorebrolan.se/Files-sv/Örebro%20läns%20landsting/Tandvard/Tandvårdsenheten/Rapporter/2013/TE-studierna%20-%20Munhälsa%20och%20tandvård.pdf> (accessed 2019-06-18).
- Franzon B, Axtelius B, Åkerman S, Klinge B. Dental politics and subsidy systems for adults in Sweden from 1974 until 2016. *BDJOpen* (2017) 3, 17007; doi:10.1038/bdjopen.2017.7;
- Graneheim UH, Lundman B. Qualitative content analysis in nursing research, concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today*. 2004;24:103-112.
- Happident AB. Online available at: <https://happident.se/om-oss/> (accessed 2019-03-26)
- Hjalmers K. 2006. Good work for dentists – ideal and reality for female unpromoted general practice dentists in a region of Sweden. *Swed Dent J Suppl* 2006;182:10-136.
- Hood, C. A Public Management for All Seasons? *Public Administration*. 1991; 69(1): 3-19. doi:10.1111/j.1467-9299.1991.tb00779.x.
- Hugoson A, Koch G, Göthberg C, Helkimo AN, Lundin SA, Norderyd O, Sjödin B, Sondell K. Oral health of individuals aged 3-80 years in Jönköping, Sweden during 30 years (1973-2003). II. Review of clinical and radiographic findings. *Swed Dent J*. 2005;29:139-55.
- Jansson H, Norderyd O, Papias A, Wahlin Å. Secular trends over 40 years of periodontal health and disease in individuals aged 20-80 years in Jönköping, Sweden: Repeated cross-sectional studies *J Clin Periodontol*. 2018;45:1016–1024. [se/publikationer/rapporter/](http://publikationer/rapporter/) (accessed 2019-07-02).
- Koch B. Tandvårdsförsäkringens tillkomst och förändring (In Swedish). Available at: *Svensk Medicinskhistorisk Tidskrift* 2014;18:86-88.
- Konkurrenverket (Swedish Competition Authority) 2005. Avreglering, konkurrensutsättning och ekonomisk effektivitet – offentligt eller privat? Online available at: <http://www.konkurrensverket.se/globalassets/forskning/projekt/avreglering-konkurrensutsattning-och-ekonomisk-effektivitet.pdf>. (accessed 2019-06-30).
- Konkurrenverket (Swedish Competition Authority) Tandvård och konkurrens, Konkurrensverkets rapportserie: Available at: <http://www.konkurrensverket.se> 2004;1 ISSN-nr 1401-8438
- Konkurrenverket. (Swedish Competition Authority) Tandvårdsmarknaden., Rapport 2018:1. Available at: http://www.konkurrensverket.se/globalassets/publikationer/rapporter/rapport_2018-1_kap23-tandvardsmarknaden.pdf

- Kähkönen L. Limitation to creating and options for maintaining local quasi-markets. *Kommunal ekonomi och politik* 2007;11:7-28.
- Kähkönen L. Quasi-markets, competition and market failures in local government services. *Kommunal ekonomi och politik* 2004;8:31-47.
- Lindblom C. I väntan på tandvård – hur tandröten blev politik. Thesis. Linköping: Linköpings universitet; 2004. ISBN 91 7203 591 9.
- Le Grand J, Bartlett W. Quasi-Markets and Social Policy: The Way Forward? In *Quasi-Markets and Social Policy*. ISBN: 978-0-333-56519-3. UK: Palgrave Macmillan; 1993 pp 202-220.
- Lundegren N. Oral health and selfpercieved oral treatment need of adults in Sweden. *Swed Dent J Supp* 2012;223:10-76.
- Mann R D. A review of the relationship between personality and performance in small groups. *Psychological Bulletin* 1959;56: 241–270. doi:10.1037/h0044587.
- Markwell D. *Instincts to lead; On leadership, Peace, and Education*. Australia: Connor Court; 2013.
- MyDentist AB. Available online at: <https://www.mydentist.se> (accessed 2019-03-26).
- Nihtilä A, Widström E, Elonheimo O. Adult heavy and low users of dental services: treatment provided. *Swed Dent J* 2016;40:21-31.
- Norderyd O, Koch G, Papias A, et al. Oral health of individuals aged 3-80 years in Jönköping, Sweden during 40 years (1973-2013). I. Review of findings on oral care habits and knowledge of oral health. *Swed Dent J*. 2015;39:57-68.
- Norderyd O, Koch G, Papias A, et al. Oral health of individuals aged 3-80 years in Jönköping, Sweden during 40 years (1973-2013). II. Review of clinical and radiographic findings. *Swed Dent J*. 2015;39:69-86.
- Ordell S. Organisation and management of public dentistry in Sweden - Past, present and future. Thesis. Malmö: Malmö universitet; 2011. ISBN 978-91-7104-382-5.
- Ordell S, Söderfeldt B. Understanding politics? Some lessons from Swedish dentistry. *Community Dent Health*. 2009;26:239-43.
- Peters T J, Waterman Jr R H. *In Search of Excellence*. New York: Harper & Row, 1982.
- Praktikertjänst AB. Available online at: <https://www.praktikertjanst.se/tandvard/> (accessed 2019-03-26).
- Pollitt C, Bouckaert, G. *Public Management Reform*. New York: Oxford University Press; 2011 p. 38. ISBN 978-0-19-959508-2.
- Pälvärinne R, Widström E, Forsberg B, Eaton K, Birkhed D. The health- care system and provision of oral healthcare in European Union member states. Part 9: Sweden. *BDJ* 2018;244:647-651.

- Regeringskansliet 2018. Palm ska utreda svenskarnas tänder. Online available at: <https://www.regeringen.se/pressmeddelanden/2018/03/palm-ska-utreda-svenskarnas-tander/> (accessed 2019-07-09).
- Region Örebro län. Tandvårdsrapporter 2019. TE-studierna 2017. Online available at: <https://www.regionorebrolan.se/Files-sv/Örebro%20läns%20landsting/Tandvard/Tandvårdsenheten/Rapporter/2019/Munhälsa%20och%20tandvård%20TE-studierna%202017.pdf> (accessed 2019-07-03).
- Riksrevisionsverket (The Swedish National Audit Office, NAO). The 2008 dental care reform – does everyone benefit? Available at: Riksrevisionen.se, RiR 2012:12, Dnr: 31-2011-0263.
- Sandberg H, Fors U. Den nivågrupperade modellen – riskgruppering för bättre tandhälsa. *Swed Dent J* 2007;31:171–179.
- Sehested K. 2002. How new public management reforms challenge the roles of professionals. *Int J Public Admin*; 25(12):1513-1537.
- Singer S.J, Tucker A.L. The Effectiveness of Management-By-Walking-Around: A Randomized Field Study. *POMS* 2015;24:253-271.
- Smith, K.G., Ferrier, W.J. and Ndofor, H., 2001. Competitive dynamics research: Critique and future directions. *Handbook of strategic management*, pp.315-361.
- Socialdepartementet 1998. Tänder hela livet – nytt ersättningssystem för vuxentandvård. ISBN 91-38-20800-8.
- Socialdepartementet 2007. Friskare tänder-till rimligare priser. ISBN 978-913822721-3.
- Socialstyrelsen. Statistics on Licenced Healthcare Personnel 2013. Online available at: https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkata_https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/statistik/2015-9-7.pdf (accessed 2019-06-30)).
- Socialstyrelsen. Tandhälsoregistret. Available online at: <https://www.socialstyrelsen.se/statistik-och-data/statistik/statistikamnen/tandhalsa/> (accessed 2019-06-30)
- Socialstyrelsen. Statistikdatabasen om hälso-och sjukvårdspersonal 2016. Online available at: https://sdb.socialstyrelsen.se/if_per/val.aspx (accessed 2019-07-02)
- Statens offentliga utredningar (SOU 1998:2). Tänder hela livet - nytt ersättningssystem för vuxentandvård. Available at: sou.gov.se.
- Statistiska Centralbyrån (SCB 2015). Urbanisering från land till stad. Online available at: <https://www.scb.se/hitta-statistik/artiklar/2015/Urbanisering—from-land-till-stad/> (accessed 2019-07-08).

- Statistiska Centralbyrån (SCB 2018). Slutliga inkomster och skatter 2016. Online available at: <https://www.scb.se/hitta-statistik/statistik-efter-amne/hushallens-ekonomi/inkomster-och-inkomstfordelning/inkomster-och-skatter/pong/statistiknyhet/slutliga-inkomster-och-skatter-2016/> (accessed 2019-07-09).
- Stogdill R M. Personal factors associated with leadership: A survey of the literature. *Journal of Psychology* 1948;25:35–71. doi:10.1080/00223980.1948.9917362. PMID 18901913.
- Svenskt Kvalitetsindex (SKI). Online available at: <http://www.kvalitetsindex.se> (accessed 2019-04-11).
- Sveriges Radio, Folktandvården backar-tandvårdsavtal förlängs, P4 Norrbotten. Online available at: <https://sverigesradio.se/sida/artikel.aspx?artikel=6787591> (accessed 2019-06-15).
- Sveriges Riksdag. Prop. 1999/2000. Konkurrenspolitik för förnyelse och mångfald. Online available at: <https://www.riksdagen.se/sv/dokument-lagar/?doktyp=prop &q=Prop+1999%2F2000%3A140&p=1&st=2> (accessed 2019-06-18)
- Sveriges Riksdag. Tandvårdslag (1985:125) ändrad t.o.m.1985:685. Online available at: https://www.riksdagen.se/.../svensk-forfattningssamling/tandvardslag-1985125_sfs-1985-125 (accessed 2019-06-14).
- Sun Tzu, The Art of War. Vij Books India Pvt Ltd, 2011. ISBN 978-93-81411-58-2.
- Widström E, Eaton KA. Oral healthcare systems in the extended European union. *Oral Health Prev Dent.* 2004;2:155-94.
- Wren D A, Bedeian A G, Breeze J D. The foundations of Henri Fayol's administrative theory. *Management Decision* 2001;40.9: 906-918.
- Vårdguiden1177, SKL, Inera AB. Online available at: <https://www.1177.se/sa-fungerar-varden/kostnader-och-ersattningar/kostnader-och-ersattningar-inom-tandvard/fri-tandvard-for-barn-och-unga/> (accessed 2019-06-14).

PAPERS

I

Original Article

The Public Dental Service in Sweden: An Interview Study of Chief Dental Officers

Raimo Pälvärinne¹, Downen Birkhed², Eva Widström^{3,4}

¹Department of Oral Diagnostics, Faculty of Odontology, Malmö University, Malmö, Sweden, ²Professor emeritus, Malmö, Sweden, ³The National Institute for Health and Welfare (THL), Helsinki, Finland, ⁴Institute of Clinical Dentistry, University of Tromsø, Tromsø, Norway

ABSTRACT

Objective: The aim of this study was to investigate how the Public Dental Service (PDS) in Sweden has managed to maintain a market position at a time of change in political ideologies and increased competition from a growing private sector.

Materials and Methods: All Chief Dental Officers (CDOs), who had held this leading position for at least 5 years ($n = 22$), were asked to participate in a semi-structured telephone interview. Sixteen of the 22 CDOs participated in this study. The questions were sent by mail in 2014 before the telephone interviews, which were audiotaped, transcribed and analyzed using a qualitative analytical approach. Since this was a quality study with just few participants, no statistical analysis was carried out.

Results: All the CDOs answered that they had influenced outcomes through brand building and core value work, related to both patients and employees, and to a lesser extent through competitor analysis. Some CDOs had a slightly different approach to the way they described visions, strategies and short-term goals. They used more business-oriented concepts, such as customers, market shares, and profits. Most CDOs regarded their actions as important for the successful development of their organization.

Conclusions: The PDS appears to have a stable, strong position in the Swedish dental care market, and a great deal of effort has been put into consolidating this position.

KEYWORDS: Chief Dental Officers, competition, interviews, leadership, organization, private dental care, Public Dental Service, qualitative study, Sweden, Swedish dentistry

Received : 27-02-18.

Accepted : 06-04-18.

Published : 17-05-18.

INTRODUCTION

In the Nordic countries, there are well-developed publicly funded oral health service systems, in which local governments have a high degree of autonomy in the organization of services.^[1,2] In Sweden, a considerable share of oral healthcare is provided by the “Public Dental Service” (PDS; “Folktandvården”), which is run by the county councils or regions, financed by tax revenues and patient fees, and staffed by salaried personnel. The PDS provides oral healthcare across the entire country even in sparsely populated areas. In 2015, with some regional variation, 72%–91% of children and adolescents and 23%–47% of adults were treated at PDS clinics.^[3]

Over the past few decades, the oral healthcare provision system has undergone a major change from a strictly regulated, government-controlled system to a more independent PDS with free-pricing, and increased competition. Historically, the PDS in Sweden was founded in 1938 to provide organized oral healthcare for 7–15-year-old children and adolescents alone. Its role was subsequently expanded to include emergency oral healthcare for adults.^[4] In the following decades, government financing of public oral healthcare increased

Address for correspondence: Prof. Downen Birkhed, Persens Väg 14B, 211 42 Malmö, Sweden. E-mail: birkhed@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Pälvärinne R, Birkhed D, Widström E. The public dental service in Sweden: An interview study of chief dental officers. J Int Soc Prevent Communit Dent 2018;8:205-11.

Access this article online	
Quick Response Code:	Website: www.jispcd.org
DOI: 10.4103/jispcd.JISPCD_95_18

and adults were able to choose between private, out-of-pocket oral healthcare, and subsidized public services. The role of the PDS was developed through legislative changes, which, at that time, was thought to provide sufficient governance of public activities.^[4]

In 1974, the national dental insurance ("Tandvårdsförsäkringen") introduced the same fixed patient fees in both the public and private sectors. During the next 25 years, all preventive and conservative treatment measures, including prosthetics, were generously reimbursed for all adults. For more expensive care, even higher reimbursement was offered. This reform led to a huge and rapid increase in the demand for oral healthcare in both the private and public sectors.

In 1999, the state dental tariff ("Tandvårdstödet") was deregulated and free pricing was introduced. A reduced national reimbursement system was retained.^[5] Private dentists or companies were now able to set the prices as they wished, while the PDS prices were set by each council's political decision-makers. For children's dentistry, payments to care providers were determined by the county councils by means of capitation and the patient or the patient's parents were able to choose between the public and private sector.

In the 1990s, the social-political thinking changed and ideological commitment to market principles became popular. For example, in his paper "A public management for all seasons?", Hood^[6] discusses the "New Public Management" concept. He raises questions about the contradiction between equity and efficiency values and privatization and quasi-privatization. It was hoped that this would lead to more efficient services. Le Grand and Bartlett in 1993^[7] described this quasi-market development as a situation, in which a monopoly is exposed to competition. The result was a commercial market but not a "normal commercial market". In their paper, they stressed three major differences: (1) all suppliers do not view profit-maximization as the most important aspect, (2) in a quasi-market, the public budget restricts the demand not the customer's needs, and (3) customers do not always choose their supplier themselves, this can be done by the providers. According to these new ideas, the public sector had to open its own service provision to other providers. This change could be made by a purchaser-provider split, public tendering or using vouchers, according to Kähkönen.^[8,9]

In 2001, the County Council Limited Companies (CCLC) appeared in the Swedish oral healthcare market. The first county council to transform its PDS into a company was Stockholm. It was soon followed by the county councils of Gävleborg, Sörmland, Västmanland and the Skåne

region. Since then, no other PDS organizations have become companies.

In 2008, a detailed reform ("Tandvårdsreformen") of the oral healthcare system was made. Since then, all adults only receive a low annual subsidy, but the national insurance against high-treatment costs is still in force. Moreover, new subvention concepts (to be financed separately by the county councils), such as "necessary dental care for the disabled and elderly", "short-term dental care in the event of serious medical problems" and "long-term dental support in the event of chronic medical problems, which can jeopardize the oral situation", were introduced for adults belonging to the special needs groups: Disabled, sick, and elderly. These groups represent about 3%–6% of the population. They pay for oral healthcare with a low-fixed fee per visit in the same way as for medical care. These services were also exposed to competition, and the patients had a free choice when it came to where to get their care, just like any other adult or child.

All county councils in Sweden have Chief Dental Officers (CDOs), so-called "Tandvårdschefer". As executives, they are expected to be able to embed new cultures and strategies into the PDS management systems and to create processes to meet the needs of the future.^[10-14]

In recent years, there has been a tendency in the Swedish PDS, one of the largest dental organizations in the world, to move from planning to a more business-like approach.^[15] Against this background, the aim of the present study was to investigate how the PDS has managed to keep a strong market position in Sweden and the kind of visions, strategies, and leadership methods the CDOs have chosen. This was felt to be of great interest at a time of changing political values and ideologies in the country and with increasing competition with the strong private sector.

MATERIALS AND METHODS

PARTICIPANTS AND DROPOUTS

This study was carried out from September to December 2014. All CDOs ($n = 22$) in the PDS run by the Swedish county councils, who had held this leading position for at least 5 years, were asked to participate in an interview study about the visions and strategies they had chosen, together with the leadership methods for realizing goals and securing productivity, to find out how the PDS had managed to maintain its market position. After two requests, 16 of the original 22 CDOs (73%), 12 men and four women, participated in the study; 11 of them led traditional PDS organizations and five CCLCs. The Ethical Review Board at the Faculty of Odontology at Malmö University approved the study in September 2015 (Dnr: OD2015/144).

INTERVIEWS

Data were collected from semi-structured individual interviews by one of the authors (RP) in 2015. Five open questions were mailed to the CDOs before a telephone interview: (1) “How would you describe the visions and overall strategies of your PDS organization?”, (2) “What are your own short-term goals?”, (3) “How do you realize your goals – please describe your personal actions?”, (4) “How do you think your personal leadership has impacted your business and the position of your PDS organization today?”, and (5) “How do you view the competitive situation with the private sector in the past, today, and in the future?”.

After receiving the written questions, the participants took part in a telephone interview, which lasted for 25–45 min. The interviews were audio-taped and transcribed word by word by an assistant. Analyses of the written text were then made by the author, PR, according to basic principles of qualitative content analysis, by looking for certain keywords and themes.^[16,17] Examples of answers are given as quotations.

RESULTS

VISIONS AND OVERALL STRATEGIES OF THE PUBLIC DENTAL SERVICE ORGANIZATIONS

The visions presented by the CDOs focused on organizational core values, such as continuous oral health improvement among the patients or the population in the PDS’s geographical area. The respondents felt that their PDS units enjoyed a strong position in the oral health-care market and are financially stable [Table 1]. Most CDOs highlighted broad health-political goals relevant to oral health. These visions were expressed as “a healthy mouth for your whole life” or “a healthy mouth – for everyone”. A new consideration was that some CDOs also included the elderly and ill as a special target group: “we should have the healthiest 70+-year olds” or “we aim for a good life for the sick and elderly”. Patient-centred oral health-care provision means availability, for example, no

waiting lists for treatment and was measured by various customer satisfaction indices.

In most of the 16 organizations, the CDOs’ vision also included the employees. This was expressed in terms like “job satisfaction,” “employee participation in the decision-making process in terms of their own work” and “co-operation with other health-care sectors.” Teamwork and team members’ personal responsibility for their share of the total provision, which means that every single employee has to take a personal share of the volume of the oral treatment provision and the income for the clinic at which they work. One of the respondents concluded “the vision is realized by the employees”.

As regards the market position, there was a dividing line between the CCLCs established in the 2000s and the PDS organizations governed by the traditional management model. The CDOs of the CCLCs talked more in terms of “customers instead of patients and gross margins”. They also used competitive expressions, such as “becoming the best dental company” or “the market leader in the region”, with the aim of expanding to a certain number of patients per year. The traditional CDOs talked more about “the positive development of dental health in general or in specific target groups”. The CDOs of the CCLCs also described their visions more regarding “business plans than care plans”. One of the respondents commented on the CCLC foundation by stating that “Unfortunately, I can see that the commercialization of the PDS appears to have removed the PDS away from sociopolitical engagement”.

In the overall strategies for working toward the visions, the employees were regarded as key factors in almost all 16 organizations. This was expressed as the strategy being “team development to achieve highly professional treatment” or “visible leadership with strong employee influence” and “giving intermediate-level managers the freedom to make decisions independently within their area of responsibility”. Many respondents talked not

Table 1: Subjects highlighted in the visions and strategies (keywords) of the regional Public Dental Service organizations listed by the Chief Dental Officers

Visions	Strategies to implement the visions
A healthy mouth - for all	An oral healthcare provision system built on availability and quality and adapted to patients’ needs and demands
Improvements in oral health	Care plans and business plans Health-oriented oral care using teamwork
Patient centred care production	Easy access to care and satisfied customers
Good terms for the employees	Continuing skills development and career development (clinical, administrative) and team development. Individually set salaries Employee influence at all levels
A strong market position for the organization	Good working conditions, good dental equipment
The leading alternative/choice in oral healthcare in the county council	Nonprofit dentistry working with prevention toward health for patients

only about upgrading the competence of the existing employees in their strategies but also of striving “to become the most attractive employer in dentistry” and “to attract valuable *employees*”, which were regarded as valuable in terms of competition and provision.

SHORT-TERM GOALS

As far as the short-term objectives were concerned, the responses were more “hands-on” and more “in the present”. Most CDOs mentioned customer satisfaction and easy access to care of high quality leading to increased numbers of customers. “Good staffing, dedicated employees and having the opportunity for continuous skills development in the workplace” were mentioned. Economic objectives also played a role here. The efficiency of the PDS organization, with the expectation of an increase in productivity, was a recurring theme, as well as an increase in the number of contractors in the PDS organizations’ new capitation payment system, called “Frisktandvård” (contract care). “*A stable economy that created the scope for manoeuvre*” was mentioned by several respondents, not as an isolated objective but as a means of developing the business. Here too, there was a slightly different type of response between the traditional CDOs and the CDOs of the CCLCs, where the latter were more focused on increasing the number of customers, profitability, and profit margins. Some respondents also suggested an increased rate of return to the owners (the county councils).

PERSONAL ACTIONS IN REALIZING GOALS

When asked about the CDOs’ personal actions as described by the keywords “freedom of responsibility to subordinates”, “good relations with principals”, “assistant managers”, “management and governance, and “activity monitoring”, the majority of the respondents were convinced that one of the most important aspects was to handle all issues and cases at the right level of management: “overall issues at the top-management level, middle-management issues at that level,” and “the floor questions by the employees at this level”. This meant that broad strategic issues were a responsibility that belonged to the PDS management and more operational questions were to be handled at middle-management level. This was the dominant view of the CDOs in large, hierarchical organizations, while CDOs in flatter, smaller organizations also acted together at operational level or instead of subordinate commanders. All the CDOs claimed that “a positive economic result” was an important objective for their organizations, but some also mentioned pure economic output as a control model. Statements such as “in addition to economic goals, there are goals relating to market shares” and “we want to

increase our patient stock by 2,500–3,000 a year and the profit should be at least 2.5% a year” characterized this sentiment. As tools in their leadership, three CDOs mentioned “a balanced scorecard” as an important strategic performance management tool.

PERSONAL LEADERSHIP

An individual organizational culture and the personal core values of work were mentioned as important issues at meetings on different levels in the organization (PDS or county council). Building further on the brand names of “Folk tandvården” (PDS) and “Frisk tandvård” (contract care) was also regarded as crucial for market share size. One of the PDS organizations even gave a bonus to employees who successfully marketed the contract model. Some of the PDS managers did not feel that their personal leadership had influenced the actual market share, but that this had grown on its own (keywords: Skilled employees, visible leadership, brand values, market success, customer orientation; Table 2).

Thirteen of the 16 CDOs (81%) were convinced that their personal actions had had an influence, or even a great influence, on the development of the PDS organization they were leading or had led. Personal leadership and their own visibility in the organization were regarded as important by most respondents when it came to maintaining or expanding the organization’s market shares. The CDOs regularly visited PDS clinics and had dialogues about their mission with subordinate leaders and employees. Those who gave contrasting responses pointed to their orders from above or other factors beyond their individual control, such as political decisions. These could be directives from owners or clients.

COMPETITION WITH THE PRIVATE SECTOR

The perception of competition varied across the country (keywords: No obvious competition, the PDS is getting stronger in the market, collaboration with the private sector, it was tough yesterday– but tougher today).

Table 2: Issues describing personal leadership stressed in some keywords by the Chief Dental Officers

Keywords	Activities
Skilled employees	A strong economy, which allows development
Visible leadership	
	Communicate the mission, short-decision paths. Management-by-walking-around
Brand mark values	Preventive dentistry, contract care
Market success	PDS - the obvious choice for both patients and employees. Strong market shares in both dentistry for adults and pediatric dentistry
Customer orientation	Satisfied patients. No waiting lists. Appointments through Internet
PDS=Public Dental Service	

In regions with traditional private dentistry, the CDOs felt that they collaborated effectively with the private sector and they were not concerned about competition. The tradition of “everyone does what they are expected to do” was an advantage for the PDS providing mainly pediatric dentistry, as this is where the PDS in Sweden was born, and it is still an important target group for success. Children grow up and become adults and remain in PDS care. In this context, the introduction of the concept of “Frisk tandvård” (contract care) was also regarded as a key factor for success.

A few respondents expressed concern about competition. They led the PDS in regions with a stronger element of new private dental chains offering both general and specialist care. Competition was mentioned in terms not only of patients but also of recruiting and retaining employees. Most CDOs mentioned “branding” aimed at both patients and new employees, in a new market situation.

DISCUSSION

There is little research on leadership and management in the public sector in Sweden^[10,11] and on the PDSs, in spite of their long history.^[4] However, the topic of leadership in public organizations appears to have attracted more interest recently^[12,13] and several PDSs mention “leadership” on their websites as an important subject for their employees and are organizing further education courses. Some more research in this area can be found in the other Nordic countries, which have fairly similar oral health-care provision models.^[18-22]

In the present study, a qualitative approach was chosen because of the small number of PDS organizations and CDOs and because of the lack of previous studies in this area. The trustworthiness of the method depends on several phases, from the preparation of the interview questions, and data collection to reporting the results. A checklist for researchers using this method has been compiled, and it was used by the authors.^[23]

One strength of the present study is that the authors are familiar with the topic from their own experience, whereas a weakness might be that one of the authors (RP) is a former CDO in Sweden. However, he left his position a few years ago. Only five questions were asked in the present study because the CDOs are very busy leaders with 500–3,000 employees. We were therefore afraid that the drop-out rate would be higher if there were more questions.

Public organizations have some special features that commercial organizations do not.^[8,9] The PDS is guided by values of common good and sociopolitical goals

relating to equal access and equal treatment and reducing financial barriers in the use of services and so on. The PDS also has an owner, the citizens, represented by their democratically elected politicians. It might be more complex for a CDO in the PDS to have a political board consisting of politicians representing different political values than to have a solely commercial board. CDOs in the PDS had to satisfy several stakeholders, i.e., the population in the geographical area of the PDS, the patients at the PDS, the employees, the politicians and the local media. Even if the CDOs can be regarded as busy individuals, the participation rate of 73% (16 of 22) in the present interview study was relatively high.

All the CDOs emphasized the importance of working together with their employees and many others to achieve the desired results. It was obvious that the CDOs did not feel lonely and isolated like their colleagues in the smaller municipal PDS organizations in a neighboring country.^[24] On the contrary, the interviewed CDOs appeared to feel fairly safe and content in their roles as leaders. They did not need to work too much on competitor analyses. Instead, they were able to concentrate on brand building and core value work related to both patients and employees.

The CDOs' visions and also their strategies appeared in some contexts to be somewhat weak and not particularly challenging. Dramatic visions were probably not necessary due to the long history of a strong PDS, with firm support from both politicians and the public. It has to be noticed that the Swedish economy has been stable for a long period, and there has not been severe cuts to the public sector supply of dental services or subsidy of adult treatment as has happened in some other countries, for example, Ireland.^[25]

The promotion of oral health and a good service level are still important in Sweden.^[26,27] CDOs' short-term aspirations and efforts were extremely concrete. Working and talking with their employees and “being seen” regularly in the workplace were key elements of their leadership. The traditional hierarchy of a public organization^[10,11] could be seen in the delegation of responsibilities and decision-making power at different levels. Teamwork has been regarded as one of the cornerstones of modern oral healthcare and a great deal of effort has been put into developing this. The number of dental hygienists in the PDS is the highest in the Nordic countries and in Europe,^[1,2] and the effective use of dental auxiliaries is also known to reduce costs.^[9]

A stable economy and a positive economic result were mentioned by all the CDOs as essential prerequisites for all the activities in the PDS, where adult care was mainly

financed by patient fees and children's and special needs groups' care by tax revenues. It appeared that the productivity-based salaries helped keep the economy in balance.

The interviewed CDOs gave fairly similar answers to most of the five questions, even if there was some variation. However, regarding the five limited liability companies (CCLC), the CDOs spoke a different language and used business concepts, such as customers, market shares, and profits in their conversation. They also expressed different attitudes toward the economic aspects of their business. Due to the small number of respondents, no questions about true business success could be asked.

It was hoped that the marketization of healthcare would increase efficiency and accessibility to oral healthcare without damaging equity. More recently, the quasi-market system has been criticized for not being so efficient and having unexpected dimensions^[8,9] and discussions about various market forms in the public sector have moved to so-called "customer-choice" models. In practice, adult oral healthcare has always been open to free choice for patients in Sweden^[15] and the interviews gave the impression that the most intense marketization period had already passed. Competition was assessed differently, depending on the activity of local players. Worries related to the new private dental companies, which acted "more aggressively" than traditional private dental care when it came to the recruitment of patients and employees. Established public health dentists could be recruited through personal contacts, which does not happen in the PDS, where vacancies are advertised in the traditional way. The new players also organized "market stalls" at supermarkets to recruit customers (patients) at weekends and even offered "family dentistry". This approach is alien to the PDS, which only acts on the "streets" with its health messages, such as during the "International Oral Health Day" or the so-called "Fluoride Aunt's Day" ("Fluortantens Dag").

All PDS units provide specialist care, if not always in all the eight specialties recognized in Sweden. Unexpectedly, specialist care was not mentioned as being of primary importance in the interviews. General dentistry appeared to be more important to the CDOs. This may have been because most patients have all their oral healthcare needs taken care of by general practitioners, although the specialists are an important resource when treatments are more difficult. The continuing strong market position in child dental care enjoyed by the PDS (85%–90%) was assessed as a clear competitive advantage when recruiting adult patients. The large proportion of children aged between 3 and 19 years, who pay regular visits to

the PDS until they are over 16 years of age, must be perceived as good encouragement for these patients and their parents to seek oral health care from the PDS as adults. For example, one of the CDOs had extended child dental care up to 24 years.

One of the main findings in the present study was that most CDOs were convinced that their personal leadership had played a crucial part in positive activity development in their organizations. This indicates a high level of self-confidence among the CDOs. To delegate the right tasks to individuals at the right level in the administrative hierarchy of the PDS organization and at the right moment was considered to be one of the most important methods of leadership.

CONCLUSIONS

The CDOs had handled a situation of increasing competition through brand building and core value work related to both patients and employees but less using competitor analysis. These findings suggest that the PDS' position within Swedish oral healthcare is strong, as it accounts for almost 45% of the total oral healthcare market. A great deal of effort appears to have been made to consolidate this situation. When it came to the CCLC, the CDOs had slightly different views compared with those leading traditional PDS units.

ACKNOWLEDGMENT

The authors would like to thank all Chief Dental Officers for participating in the study and Dr Ken Eaton and Jeanette Kliger for revising the English.

FINANCIAL SUPPORT AND SPONSORSHIP

The study was financially supported by the PDS, the County Council for West Sweden, Västra Götaland, Sweden.

CONFLICTS OF INTEREST

There are no conflicts of interest.

REFERENCES

1. Widström E, Eaton KA. Oral healthcare systems in the extended European Union. *Oral Health Prev Dent* 2004;2:155-94.
2. Widström E, Agustsdottir H, Byrkejflot LI, Palvärinne R, Bøge Christensen L. Systems for provision of oral health care in the Nordic countries. *Tandlaegebladet* 2015;119:702-11. Available from: <http://www.tandlaegebladet.dk/sites/default/files/articles-pdf/TB092015-702-711.pdf>. [Last accessed on 2018 Apr 01].
3. The Swedish Quality Register for Caries and Periodontal Disease. In Swedish. 2015. Available from: <http://www.skapareg.se/wp-content/uploads/2016/11/SKaPa-Arsrapport-2015.pdf>. [Last accessed on 2018 Apr 01].
4. Koch B. The Swedish Dental Insurance - Establishment and Changes In Swedish. *Svensk Medicinhistorisk Tidskrift* 2014;18:86-88. Available from: <http://www.sls.se/mhi/svensk-medicinhistorisk-tidskrift/svensk-medicinhistorisk-tidskrift-2014/>. [Last accessed on 2018 Apr 01].
5. Healthy teeth - at a reasonable cost. In Swedish. Available from:

- <http://www.regeringen.se/49b6a9/contentassets/e015f2ed62a94c9490cf0371af20499b/friskare-tander---till-rimliga-kostnader-hela-dokumentet-sou-200719>. [Last accessed on 2018 Apr 01].
6. Hood C. A public management for all seasons? *Public Adm* 1991;69:3-19.
7. Le Grand J, Bartlett W. Quasi-markets and social policy: The way forward? In: *Quasi-Markets and Social Policy*. UK: Palgrave Macmillan; 1993. p. 202-20.
8. Kähkönen L. Quasi-markets, competition and market failures in local government services. *Kommunal Ekon Och Politik* 2004;8:31-47. Available from: https://gupea.ub.gu.se/bitstream/2077/20668/1/gupea_2077_20668_1.pdf. [Last accessed on 2018 Apr 01].
9. Kähkönen L. Limitation to creating and options for maintaining local quasi-markets. *Kommunal Ekon Och Politik* 2007;11:7-28. Available from: https://gupea.ub.gu.se/bitstream/2077/20714/1/gupea_2077_20714_1.pdf. [Last accessed on 2018 Apr 01].
10. Ordell S, Söderfeldt B. Management structures and beliefs in a professional organisation. An example from Swedish public dental health services. *Swed Dent J* 2010;34:167-76.
11. Ordell S. Organisation and management of public dentistry in Sweden. Past, present and future. *Swed Dent J Suppl* 2011;210:10-92.
12. Neu Morén E, Hansson J, Stråberg T. New Public Management on an Operative Level. Report 2011. In Swedish. Available from: <https://www.vinnova.se/p/new-public-management-pa-operativ-niva-om-chefskapet-forutsattningar-i-den-kommunala-praktiken>. [Last accessed on 2018 Apr 01].
13. Holmberg I. Center for Advanced Studies in Leadership, Stockholm School of Economics Information. In Swedish. Vinnova 2015. Available from: <https://www.vinnova.se/contentassets/820d49b3632149a08c97a9b0020b6c7a/ledarskap-for-innovation.pdf>. [Last accessed on 2018 Apr 01].
14. Pollitt C, Boukhart G. A New Public Management, Governance and the Neo-Weberian State. 3rd ed. Oxford and New York: Oxford University Press; 2011.
15. Palvärinne R, Widström E, Forsberg BC, Eaton KA, Birkhed D. The healthcare system and the provision of oral healthcare in European Union member states part 9: Sweden. *Br Dent J* 2018;224. DOI: 10.1038/sj.bdj.2018.269. [in press].
16. Groenewald T. A phenomenological research design illustrated. *Int J Qual Methods* 2004;3:42-55.
17. Diccio-Bloom B, Crabtree BF. The qualitative research interview. *Med Educ* 2006;40:314-21.
18. Widström E, Ekman A, Aandahl LS, Pedersen MM, Agustsdottir H, Eaton KA, et al. Developments in oral health policy in the Nordic countries since 1990. *Oral Health Prev Dent* 2005;3:225-35.
19. Widström E, Väisänen A, Barentin I. Justification for a public dental service: Finnish, Norwegian and Swedish experiences. *Oral Health Dent Manage Black Sea Ctries* 2009;8:17-24. Available from: <http://www.oralhealth.ro/volumes/2009/volume-1/V1-09-4.pdf>. [Last accessed on 2018 Apr 01].
20. Alestalo P, Widström E. Lead public health service dentists' leadership qualities evaluated by their superiors and subordinates in Finland. *Oral Health Dent Manag* 2011;10:13-21.
21. Alestalo P, Widström E. Lead public health service dentists in Finland: Leaders or dentists? *Oral Health Dent Manag* 2011;10:13-21.
22. Alestalo P, Widström E. Women's leadership in the public dental service in Finland. *Oral Health Dent Manag* 2012;11:74-82.
23. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: Concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today* 2004;24:105-12.
24. Alestalo P, Widström E. Lead dentists in the public dental service in Finland during a major reform. *Oral Health Dent Manag* 2013;12:166-73.
25. Woods N, Ahern S, Burke F, Eaton KA, Widström E. The healthcare system and the provision of oral healthcare in European Union member states. Part 7: Republic of Ireland. *Br Dent J* 2017;222:541-8.
26. Franzon B, Axtelius B, Åkerman S, Klinge B. Dental politics and subsidy systems for adults in Sweden from 1974 until 2016. *BDJ Open* 2017;3:17007.
27. Ulfssdottir Eriksson Y, Berg K, Boman UW, Hakeberg M. Contract care in dentistry: Sense-making of the concept and in practice when multiple institutional logics are at play. *Sociol Health Illn* 2017;39:1035-49.

II

ARTICLE OPEN

Visitors' experiences of public and private dental care in Sweden in 1992–2012

Raimo Pälvärrinne¹, Downen Birkhed², Birger Forsberg³ and Eeva Widström⁴**AIM:** The aim was to compare adult patients' experiences of public and private dental care in Sweden over time from the ages of 50 and 70 years, between 1992 and 2012.**MATERIALS AND METHODS:** Data on visiting patterns, oral health, fees and satisfaction were obtained from a questionnaire study every 5 years in 1992–2012 and analysed by using the Chi-square test and logistic regression. In the present study, the answers given by 6083 respondents in 1992 and 5220 in 2012 were included.**RESULTS:** Of the 50-year olds, 73.5% had visited the private sector and 26.5% the public sector. In 1992, patients in the public dental service (PDS) had visited their dentists less frequently and experienced having a slightly poorer dental status compared with private patients. After 20 years (2012), the distribution of patients between the two sectors was almost the same (71.4% and 28.8%) and the differences in visiting pattern and dental health persisted. During the study period, 21.6% of the patients changed treatment sector. A small proportion of patients had high treatment costs. A larger proportion of the private sector visitors than the PDS visitors were consistently satisfied with the dental care they had received.**CONCLUSIONS:** As a whole, most adult patients in Sweden were satisfied with their dental care at both public and private clinics.BDJ Open (2019)5:12; <https://doi.org/10.1038/s41405-019-0020-1>

INTRODUCTION

In Sweden, there are both public and private oral health-care providers. The public dental service (PDS, *Folk tandvården*) is operated by all 21 county councils/regions (20 CCs and one municipality), with approximately 880 dental clinics. Private dental care comprises approximately 2000 care providers (many with more than one dentist) with approximately 3550 dental surgeries. Of the 7528 dentists (in 2013), 4070 (54%) were publicly employed and 3458 (46%) worked in the private sector.¹ The number of dentists has been relatively constant since the beginning of the 1990s, with about 7500 professional dentists, and this also applies to the distribution between the sectors. Approximately 60% of adult patients visit private dental care providers, while 40% visit the PDS.²

In 1992, two of the CCs, Örebro (T) and Östergötland (E), started a prospective population study within dentistry. The aim was to ask all 50-year-old residents in these CCs about their opinions of their own teeth and the dental care provided for them. CC politicians initiated the study. The purpose was to study the extent to which the CCs met the legal requirements relating to the availability of dental services when needed by the residents. In addition to providing a basis for planning dental care for groups of elderly people in the CCs, the results were going to be used by the National Board of Health and Welfare in its work on indicators of good dental care.³ The study was repeated every 5 years until 2012 and it has resulted in a number of publications on the respondents' opinions of their oral health, dental care habits and attitudes to and experiences of dental care.^{4,5} Most respondents in 1992 felt that their oral health was good (89%) and 64% said they attended a dental

clinic at least once a year. Satisfaction with dental care was high (94%).⁶

To date, the database generated from the surveys in the two counties, T and E, has not been used for a comparison of public and private providers. In other countries, treatment in the public sector is less expensive for the patients than in the private sector and the PDS is more frequently used by people with a lower income and/or lower education than the private sector. Public sector patients may belong to so-called special needs groups and the treatment may differ in comparison with the private sector.^{7–9} We felt it would be interesting to explore whether this was also the case in Sweden in the present study.

In 1992, when the study started, all dental treatment (including bridgework and prosthetics) for adults was generously (25–75%) subsidised by the government. The PDS and the private sector had the same fixed fees and a high-cost protection system gave extra support to patients with large-scale treatment needs.¹⁰ In 1998, the subsidy system was reformed. In brief, subsidies were restricted to “basic dental care” for all adults (not including examinations, prosthodontics or orthodontics). Subsidies were higher for people with disease and disability. Subsidy for “contract care” was introduced. Establishment control was taken away and free pricing was introduced, enabling the private dentists and the CCs to set the service charges as they chose.¹¹ This resulted in private dental care becoming more expensive than public care.¹²

The next dental reform was introduced in 2008. The system established then is still in place today in 2019. An annual “general dental allowance” (*Allmänna Tandvårdsbidraget*, ATB) was introduced for all adults; it was 150 or 300 SEK (£14 or 28), depending on age. A “protection against high costs” with a subsidy from the

¹Department of Oral Diagnostics, Faculty of Odontology, Malmö University, Malmö, Sweden; ²Professor Emeritus, Malmö, Sweden; ³Department of Public Health Sciences, Karolinska Institutet, Stockholm, Sweden and ⁴Institute of Clinical Dentistry, Arctic University, Tromsø, Norway
Correspondence: Raimo Pälvärrinne (palvarinneraimo@gmail.com)

Received: 19 March 2019 Revised: 20 May 2019 Accepted: 3 June 2019

Published online: 22 August 2019

government was also introduced. This cap on private spending was based on reference prices defined by the government, as providers were free to set patient fees.¹³ This means that, in comparison with 1992 and 1997, adults had to cover a considerably larger share of their dental costs out of pocket in 2002–2012. On the other hand, adults' oral health has improved during that period. According to a longitudinal study in the City of Jönköping in Southern Sweden: "The proportions of edentulous individuals aged 40–70 years were 16%, 12%, 8%, 1% and 0.3% in 1973, 1983, 1993, 2003 and 2013, respectively. No complete denture wearer younger than 80 years was found in 2013. During the 40-year period, the mean number of teeth in the 30- to 80-year age groups increased. In 2013, the 60-year olds had almost complete dentitions".^{14,15}

AIM

The aim of this study was to investigate adults' experiences and opinions of the dental care they have received over time from the age of 50–70 years. Patients' dental visiting patterns, satisfaction with care, oral health measured as the numbers of teeth and fees paid are compared between the two types of provider, public and private. We also sought to explore possible changes in the use of the two provider groups during the study period and differences between the patients who had visited the public sector and those who had visited the private sector at the start and the end of the study. In addition, a longitudinal follow-up was conducted among those who claimed to have visited only the public sector or the private sector and those who claimed to have used both sectors during the whole study period.

MATERIAL AND METHODS

The data in this study emerged from a data collection procedure at the beginning of 1992, when all 50-year-old residents ($n = 8888$) in the Counties of Örebro (T) and Östergötland (E) were sent a postal questionnaire relating to their "experiences of dental care and oral health". The questionnaire was validated and then approved by the Ethical Review Board in Uppsala (Dnr 2011/336). Basically the same questionnaire was sent to the cohort born in 1942 every 5 years until 2012. In 1992, the response rate was 71.4% ($n = 6343$), in 1997, 74.3% ($n = 6513$), in 2002, 75.0% ($n = 6372$), in 2007, 73.1% ($n = 6078$) and, in 2012, 72.2% ($n = 5697$).⁶ In the present study, the answers were analysed from 6083 respondents in 1992 and 5220 respondents in 2012, who stated that they had visited the PDS or private clinics.

This study focused on the following variables: (a) frequency of dental visits (How often did you make dental visits during the last 5 years?), (b) treatment sector (Where did you mainly have dental care during the last 5 years?), (c) cost of dental treatment paid by the patients (How much did you pay out of pocket for dental care during the last year?), (d) satisfaction with the treatment (Are you generally satisfied/not satisfied with the dental care you have received?) and (e) the number of their own teeth remaining (How many of your own teeth do you have?). The alternative answers to all the questions are shown in Table 1. Background factors were education, gender, marital status and country of birth. All respondents did not always answer all the questions.

Statistical methods

Chi-square tests were performed on differences between the PDS and private visitor cohorts at baseline and in 2012. The Chi-square test was also used to analyse changes in visiting patterns, number of teeth and satisfaction between 1992 and 2012 for patients who never changed dental care provider sector during the 20-year period. In order to further analyse the factors that might influence the odds of having "all teeth left" after a 20-year follow-up, a

Table 1. Comparison of the 50-year-old respondents' dental visiting patterns, dental health (numbers of teeth), cost of dental care during the last year, satisfaction with care received, gender, education and marital status by treatment sector used (the PDS or private) at the latest dental visit in 1992 (or before)

	PDS	Private	Total	p-Value
<i>n</i>	1612	4471	6083	
Frequency of visits during the last 5-year period, <i>n</i> (%)				<0.001
Every 2nd year or more seldom	274 (17.0)	208 (4.7)	482 (7.9)	
Once a year	1039 (64.5)	2961 (66.2)	4000 (65.8)	
Twice a year or more often	296 (18.4)	1297 (29.0)	1593 (26.2)	
Missing	3 (0.2)	5 (0.1)	8 (0.1)	
Number of teeth, <i>n</i> (%)				<0.001
Edentulous or very few teeth left	76 (4.7)	70 (1.6)	146 (2.4)	
Missing rather a lot of teeth	377 (23.4)	693 (15.5)	1070 (17.6)	
Missing a single tooth	855 (53.0)	2518 (56.3)	3373 (55.4)	
All teeth left	276 (17.1)	1081 (24.2)	1357 (22.3)	
Missing	28 (1.7)	109 (2.4)	137 (2.3)	
Cost of care paid by the patient during the last year, <i>n</i> (%)				<0.001
Nothing	115 (7.1)	138 (3.1)	253 (4.2)	
Less than 300 SEK (€25.1)	400 (24.8)	1195 (26.7)	1595 (26.2)	
301–1000 SEK (€25.2–83.8)	727 (45.1)	2097 (46.9)	2824 (46.4)	
More than 1000 SEK (€83.8)	295 (18.3)	946 (21.2)	1241 (20.4)	
Missing	75 (4.7)	95 (2.1)	170 (2.8)	
Satisfaction with care received, <i>n</i> (%)				<0.001
Fairly or very dissatisfied	111 (6.9)	202 (4.5)	313 (5.1)	
Generally satisfied	792 (49.1)	1845 (41.3)	2637 (43.4)	
Very satisfied	681 (42.2)	2366 (52.9)	3047 (50.1)	
Missing	28 (1.7)	58 (1.3)	86 (1.4)	
Gender = male, <i>n</i> (%)	815 (50.6)	2197 (49.1)	3012 (49.5)	0.338
Level of education, <i>n</i> (%)				<0.001
No university degree	1288 (79.9)	3487 (78.0)	4775 (78.5)	
University degree	300 (18.6)	959 (21.4)	1259 (20.7)	
Missing	24 (1.5)	25 (0.6)	49 (0.8)	
Marital status, <i>n</i> (%)				0.098
Single	310 (19.2)	797 (17.8)	1107 (18.2)	
Married/cohabiting	1297 (80.5)	3669 (82.1)	4966 (81.6)	
Missing	5 (0.3)	5 (0.1)	10 (0.2)	
Country of birth, <i>n</i> (%)				<0.001
Sweden	1455 (90.3)	4248 (95.0)	5703 (93.8)	
Other Nordic country	72 (4.5)	102 (2.3)	174 (2.9)	
Other country	85 (5.3)	120 (2.7)	205 (3.4)	
Missing	0 (0.0)	1 (0.0)	1 (0.0)	

N PDS = 1612 persons and *N* private sector visitors = 4471 persons. *N*-values fluctuate because all respondents did not answer all the questions

logistic regression was performed. *p*-Values below 0.05 were considered to be significant.

Statistical analyses were conducted using R version 3.4.2 for Windows.¹⁶

RESULTS

Adults 50 years of age in 1992

In 1992, most of the then 50-year-old respondents (4471; 73.5%) had visited the private sector and 1612 (26.5%) the public sector. There were no statistically significant differences between the private and public visitors as regards gender or marital status, but PDS visitors had a significantly lower educational level ($p < 0.05$) and a larger proportion of them were born outside Sweden ($p < 0.001$; Table 1). Respondents who had made their latest dental visits to the PDS had fewer of their own teeth than those who had visited private dentists; e.g. 17.4% of the former had all their teeth left in comparison to 24.2% of the latter ($p < 0.001$; Table 1). The public visitors had visited their dental clinic more seldom than the private visitors, they were less satisfied with the care they had received ($p < 0.001$) and they had paid less for their treatment ($p < 0.05$; Table 1). Of all the respondents, 76.8% claimed to have paid less than 1000 SEK (€83.4), corresponding to 1422 SEK (£119.2) in today's monetary value.¹⁷ In 1992, the average income for 50-year-old Swedes was 15604 SEK (£1271.4).¹⁸

Adults 70 years of age in 2012

In 2012, the total number of respondents had fallen from 6083 in 1992 to 5220 (8.7%). The proportion of respondents who had most recently visited the private sector was 71.4% (3738) and, of those having visited the public sector, 28.8% (1482). These proportions were almost at the same level as 20 years earlier. The proportion of private visitors with a university education (27.6%) was significantly higher ($p < 0.001$) than that of the public visitors, 22.3% (Table 2). The respondents as a whole had a higher educational level in 2012 than in 1992. According to the answers to the questionnaire, those respondents who had mainly visited the PDS during the past 5 years had, as in 1992, statistically significantly fewer of their own teeth than those who had visited private dentists ($p < 0.001$; Table 2). The public visitors had visited their dental clinic less frequently than the private visitors and they were less satisfied with the care they had received ($p < 0.001$). There were statistically significant differences in costs paid, as the PDS visitors had paid less than the private sector visitors. Of all the respondents, 89.7% claimed to have paid less than 8000 SEK (€670.5), corresponding to 8363 SEK (£701.1) in today's monetary value (Table 2). In 2012, the average income per month for 70-year-old Swedes was 18,167 SEK (£1480.2).¹⁹ The general retirement age in Sweden is 65 years.

Private or public dental care only, or both in 1992–2012

Of the initial 4471 private visitors and, of the initial 1612 PDS visitors, who answered the questionnaire in 1992 and 2012, 2478 private visitors (55.4%) and 649 public visitors (40.2%) claimed to have visited the same treatment sector all the time. Most private patients (64.8%) claimed to have maintained the same visiting frequency as in 1992 in contrast to 51.0% of the PDS visitors ($p < 0.001$; Table 3, Fig. 1). A statistically significantly larger proportion (25.9%) of the PDS visitors visited their dentist more seldom than before, in contrast to 17.6% of the private visitors ($p < 0.001$; Table 3).

Over time, the proportion of respondents who claimed to have retained practically all their teeth decreased in both sectors (Fig. 2). Of the PDS visitors, 64.4% and, of the private sector visitors, 62.1% said that they belonged to the same "numbers of teeth category" during the whole study period ($p < 0.05$). About a quarter (24.3%/26.1%) claimed to have fewer teeth and, interestingly, 7.6%/7.7% had more teeth than initially (Table 3).

A larger proportion of the private sector visitors than PDS visitors were consistently more satisfied with the dental care they had received (Fig. 3, Table 3). At baseline, there was a difference of 10.7% among "very pleased" in favour of private dentistry. Over time, the private sector appeared to retain this position, while the PDS decreased slightly (Fig. 3).

Table 2. Comparison of the 70-year-old respondents' dental visiting patterns, dental health (numbers of teeth), cost of dental care during the last year, satisfaction with care received, gender, education and marital status by treatment sector used (the PDS or private) at the latest dental visit in 2012 (or before)

	PDS	Private	Total	p-Value
<i>n</i>	1482	3738	5220	
Frequency of visits during the last 5-year period, <i>n</i> (%)				<0.001
Every 2nd year or more seldom	370 (25.0)	218 (5.8)	588 (11.3)	
Once a year	746 (50.3)	2432 (65.1)	3178 (60.9)	
Twice a year or more often	352 (23.8)	1072 (28.7)	1424 (27.3)	
Missing	14 (0.9)	16 (0.4)	30 (0.6)	
Number of teeth, <i>n</i> (%)				<0.001
Edentulous or very few teeth left	89 (6.0)	106 (2.8)	195 (3.7)	
Missing rather a lot of teeth	392 (26.5)	730 (19.5)	1122 (21.5)	
Missing a single tooth	817 (55.1)	2284 (61.1)	3101 (59.4)	
All teeth left	141 (9.5)	530 (14.2)	671 (12.9)	
Missing	43 (2.9)	88 (2.4)	131 (2.5)	
Cost of care paid by the patient during the last year, <i>n</i> (%)				<0.001
Nothing	164 (11.1)	143 (3.8)	307 (5.9)	
1–2000 SEK (€1–167.6)	745 (50.3)	2163 (57.9)	2908 (55.7)	
2001–8000 SEK (€167.7–670.5)	400 (27.0)	1065 (28.5)	1465 (28.1)	
More than 8000 SEK (€670.5)	79 (5.3)	227 (6.1)	306 (5.9)	
Missing	94 (6.3)	140 (3.7)	234 (4.5)	
Satisfaction with care received, <i>n</i> (%)				<0.001
Fairly or very dissatisfied	121 (8.2)	136 (3.6)	257 (4.9)	
Generally satisfied	864 (58.3)	1637 (43.8)	2501 (47.9)	
Very satisfied	485 (32.7)	1949 (52.1)	2434 (46.6)	
Missing	12 (0.8)	16 (0.4)	28 (0.5)	
Gender = male, <i>n</i> (%)	748 (50.5)	1828 (48.9)	2576 (49.3)	0.311
Level of education, <i>n</i> (%)				<0.001
No university degree	1143 (77.1)	2687 (71.9)	3830 (73.4)	
University degree	330 (22.3)	1031 (27.6)	1361 (26.1)	
Missing	9 (0.6)	20 (0.5)	29 (0.6)	
Marital status, <i>n</i> (%)				<0.05
Single	379 (25.6)	830 (22.2)	1209 (23.2)	
Married/cohabiting	1049 (70.8)	2791 (74.7)	3840 (73.6)	
Missing	54 (3.6)	117 (3.1)	171 (3.3)	
Country of birth, <i>n</i> (%)				<0.05
Sweden	1370 (92.4)	3548 (94.9)	4918 (94.2)	
Other Nordic country	46 (3.1)	86 (2.3)	132 (2.5)	
Other country	62 (4.2)	97 (2.6)	159 (3.0)	
Missing	4 (0.3)	7 (0.2)	11 (0.2)	

N PDS = 1482 persons and *N* private sector visitors = 3738 persons. *N*-values fluctuate because all respondents did not answer all the questions

There was also a group we called "mixed". Individuals belonging to this group changed their care provision sector during the period. A larger proportion of respondents in this group had "fewer teeth in 2012" than respondents in the PDS and private groups ($p < 0.05$). Their visiting frequency was midway between

Table 3. Changes in visiting patterns, numbers of teeth and satisfaction with care received during the 20 years from 1992 to 2012 by treatment sector					
	Mixed	PDS	Private	Total	<i>p</i> -Value
<i>n</i>	861	649	2478	3988	
Change in visiting pattern from 1992 to 2012, <i>n</i> (%)					<0.001
Lower frequency in 2012	214 (24.9)	168 (25.9)	435 (17.6)	817 (20.5)	
Same frequency	467 (54.2)	331 (51.0)	1605 (64.8)	2403 (60.3)	
Higher frequency	174 (20.2)	142 (21.9)	432 (17.4)	748 (18.8)	
Missing	6 (0.7)	8 (1.2)	6 (0.2)	20 (0.5)	
Changes in number of teeth from 1992 to 2012, <i>n</i> (%)					0.098
Fewer teeth in 2012	259 (30.1)	158 (24.3)	646 (26.1)	1063 (26.7)	
Same number of teeth	507 (58.9)	418 (64.4)	1539 (62.1)	2464 (61.8)	
More teeth in 2012	53 (6.2)	49 (7.6)	190 (7.7)	292 (7.3)	
Missing	42 (4.9)	24 (3.7)	103 (4.2)	169 (4.2)	
Change in satisfaction from 1992 to 2012, <i>n</i> (%)					<0.05
Less satisfied in 2012	206 (23.9)	164 (25.3)	513 (20.7)	883 (22.1)	
Satisfied at the same level	479 (55.6)	378 (58.2)	1480 (59.7)	2337 (58.6)	
More satisfied in 2012	153 (17.8)	98 (15.1)	449 (18.1)	700 (17.6)	
Missing	23 (2.7)	9 (1.4)	36 (1.5)	68 (1.7)	

Respondents who changed treatment sector during the study period are included in the mixed group. The PDS and private groups include those who visited only one sector but may have missed answering some year between 1992 and 2012. *p*-Values are based on those who actively responded (i.e. missing is not included in the calculation)

Fig. 1 Proportions (%) of respondents who claimed to have made dental visits at least annually (once a year or twice a year or more often) by survey year and treatment sector (PDS or private only)

the PDS and private visitors, as was their satisfaction level (Table 3).

A separate analysis of those who, after the 20-year follow-up period, had "all their teeth left or were only missing a single tooth" (Table 4) showed that university-educated subjects had 45.8% higher odds and private sector visitors 29.6% higher odds of having all their teeth left. Married people had 19.2% higher odds than unmarried people and men had 14.3% higher odds than women of retaining their natural teeth. The results also showed that individuals born outside Sweden had lower odds, 14.8%/

Fig. 2 Proportions (%) of respondents who claimed to have kept practically all their teeth by survey year and treatment sector (PDS or private only)

16.5%, of retaining all or most of their teeth than native Swedes (Table 4).

DISCUSSION

Self-report surveys have been frequently used in Sweden when studying the use of various public services by adults, as the method has been regarded as feasible and reliable, with a response rate that is sufficiently high to generate results with good validity.²⁰ The material used in the present study has been

found to be representative of the birth cohort born in 1942. It thus provides information on the dental care of 50- to 70-year-old individuals in the two counties surveyed.²¹ The respondents in longitudinal surveys are exposed to a changing societal environment over time and, in this study, also changes in the care provision and financing systems, which may influence their opinions. They also became older, another circumstance that may influence their perspectives.³ This must be considered when interpreting the results.

The study showed that most (4471, 73.5%) of the 6083 50-year olds participating in the study in 1992 had made their latest dental visit to the private sector. Was this because of old habits or social segregation? Because the patient fees at that time were fixed and the same in both sectors, one of the most usual reasons in other countries for using the public sector, namely lower fees, did not apply here. Moreover, because there were no formal restrictions for adults to use the PDS, an explanation of the low use of the PDS might be that it was regarded as a care-giver primarily for children and young people. Further, in 2012, 71.6% of the respondents said that their latest visit had been to the private sector, although the free pricing, introduced in 1998, had made treatment in the PDS less expensive than in the private sector.¹² The private sector is

known to be efficient in recalling its patients and regular attenders are more comfortable with dental visits.^{22,23} Our earlier study showed that the Chief Dental Officers (CDOs), who were PDS leaders in the CCs, felt that keeping their former child patients in the PDS when they become adults was an important strategy.²⁴ This is supported by the new contract care payment system in Sweden (so-called "Frisktvård"), allowing a certain annual fee to be paid by the patient irrespective of treatment needed and provided, being most suitable for young adults.²⁵

At the beginning of the study, patients who visited the PDS had a slightly poorer dental status, compared with private patients. This is in accordance with studies from other countries.^{7,8} This difference also persisted over the entire examination period (1992–2012). For example, both examined groups experienced a decrease in the group answering "all teeth left", but the decrease was larger in the PDS, from 17.1% to 9.5%, than in the private sector, from 24.2% to 14.2%. On the other hand, when looking at the variables "lower number of teeth" and "same number of teeth", the figures showed that the tooth losses are on the same level in both sectors ($p > 0.05$) (Table 3). Because the formulation of the questions did not make it possible to follow the exact numbers of teeth during the study period, differences of this kind are difficult to explain. However, it was obvious that, during the 20-year study period, many of the "ageing" patients lost teeth independent of treatment sector. Those who did not lose teeth were highly educated, visited the private sector and were more often men and married than women or unmarried, which is in accordance with findings in other studies.²⁶ Well-educated people are usually able to manage good oral self-care. Private dental clients are able to visit a dentist or a dental hygienist frequently and presumably have frequent opportunities to obtain professional preventive treatment and advice. One explanation of why married people have higher odds than singles of retaining all their teeth might be that married people live a more stable life with fixed routines. It is more difficult to explain why men had higher odds. The difference between men and women was fairly small (14.3%).

One interesting finding in the present study was that about 10% of the respondents claimed that the number of teeth increased during the 20-year period. It may be difficult for patients to differentiate between natural teeth and bridgework and implants and so they may answer that they have more teeth. In Sweden, having decent-looking teeth, your own or artificial, has long been regarded as politically important and prosthetic treatment has been easily available and highly subsidised.^{9,11}

An analysis of the visiting frequency revealed that, in the PDS, the pattern of rare visits increased over time and frequent visitors also increased. In the private sector, the visiting frequencies hardly changed at all. This might be due to the practice in private dental care with "a yearly visit to the dentist", while the PDS has differentiated the recall intervals by risk assessments based on

Fig. 3 Proportions (%) of respondents who claimed to be very or rather satisfied with the dental care they had by survey year and treatment sector (PDS or private only)

	Estimate	Std. error	z-Value	p-Value	OR	Lower	Upper
(Intercept)	1.402	0.210	6.677	0.000	4.064	2.716	6.192
University degree at baseline	0.377	0.159	2.368	0.018	1.458	1.074	2.006
Private dental care at baseline	0.259	0.161	1.612	0.107	1.296	0.939	1.766
Male	0.134	0.133	1.004	0.315	1.143	0.881	1.485
Married/cohabiting	0.176	0.167	1.053	0.292	1.192	0.853	1.643
Born in the Nordic countries	-0.180	0.548	-0.329	0.742	0.835	0.317	2.874
Born outside the Nordic countries	-0.160	0.490	-0.326	0.744	0.852	0.355	2.527

Only respondents who never changed care provider and answered "all teeth left or missing a single tooth" included at baseline. N PDS = 393 persons and N private = 1705. Adjusted model (all variables included in the same model)

differences in patients' oral health but probably also influenced by the availability of staff. In Sweden, the PDS has had access problems, depending on a lack of dentists, all over the country and especially in rural areas since 2007.²⁷ This may explain the increase in the number of rare visitors. The increase in frequent visitors may be explained by the increase in the number of dental hygienists in the PDS. Dental hygienists have been seen to make an important contribution to dental care and hence the ratio of dental hygienists to dentists (2 per 5 dentists) is by international standards relatively high in Sweden.

Costs paid by the patients were difficult to compare over time, because of the many changes in the state subsidies during the 20-year period and changes to the question of patient costs in the questionnaire. At the start, in 1992, 76.8% of the respondents claimed to have paid very little, less than 1422 in current SEKs (£120) for all their dental treatment during the period of a year. Dental care was generously remunerated by the national dental insurance, as explained in the "Introduction". Only 18.3% of PDS and 21.2% of private patients paid more than 1422 SEK (£119.2) ($p < 0.001$). In 2012, free pricing had been introduced and the subsidy for dental costs started at 3000 SEK. The price level was much higher, too. In 2012, 89.7% of all patients paid below the high-level limit, which was set at 8363 SEK (£701.0) in today's monetary value. The number of patients paying more than 8363 SEK was 5.3% in the PDS and 6.1% in the private sector ($p < 0.001$). This indicates that there were very few patients paying high costs, but there were significantly more private patients doing so.

Ståhlénacke et al.^{28,29} noted in their studies that adults' satisfaction with dental services was high both in general and with the most recent dental visit, where non-visitors within the last year were more dissatisfied than those who had paid a visit during the last year. Having a high cost for care also increased dissatisfaction but to a smaller degree. The authors were not able to document any correlation between socioeconomic factors and service satisfaction.

Hancock et al.³⁰ in the UK investigated private or NHS general dental service care and patients' satisfaction in certain respects. They noted that satisfaction was greater in private dental care due to perceived access and availability and not because of technical skills.

In our study, the satisfaction rate among the private patients stayed high over the years (55% were very satisfied) but decreased for the PDS patients from 45% to 35% (Fig. 3). One possible explanation is that access and availability were greater in private dentistry. Moreover, the treatment profile of the private dentists differs from that of the PDS, which is shown in other investigations.⁹ More advanced and expensive care is provided in the private sector and simpler, less expensive care, like extractions and fillings, in the PDS.³¹ In the above-mentioned study in Finland, adult patients in the PDS were shown to have more examinations and emergency care, while private patients received more comprehensive care.⁹

Finally, there was a group of respondents using both sectors. This mixed group represented 21.6% of the cohort, showing that many people wanted or needed to change their dental treatment supplier over time. People belonging to this mixed group were shown to lose more teeth than the PDS and private sector attenders and to make more frequent dental visits than the PDS visitors but less often than the private sector visitors. They did not change their degree of satisfaction during this period. These sector users appeared to be more irregular attenders and probably visited dentists when needed, due to pain or lost fillings, and want to choose their visits on their own, not via a recall system. Some private and mixed sector visitors may also have needed specialist care, which is predominantly provided in the public sector in Sweden. According to the Swedish National Board of Health and Welfare, 66% of men and 73% of women made dental visits to

obtain a basic examination during the 3-year period, from 2015 to 2017. Older people used dental services more often than younger ones.¹¹

CONCLUSIONS

There are some differences between PDS and private dentistry in a longitudinal study spanning 20 years. The differences mainly relate to satisfaction, access and availability of dental care. Most private patients appear to visit their dental clinic with the same frequency, once a year or more often, over time, while the PDS has a more uneven visiting pattern. Over 20% of the patients changed provider between the two sectors during a 20-year period. This is an interesting observation, but the reason is not explained in this study.

In Sweden, the regular use of dental services throughout life is regarded as important and is believed to contribute to a good dental appearance and functioning dentition. The two treatment sectors, the PDS and the private sector, play slightly different roles and, as competitors, for example, it is hoped that they will drive quality development forward and display the best possible ability to meet the demands of patients and politicians. It seems apparent from the present study that the two sectors also complement one another.

ACKNOWLEDGEMENTS

The authors thank Jeanette Kilger, for English revision, and Eva Hagel, Karolinska Institute, for conducting the statistical analyses. The authors are also grateful to Tommy Johansson, County Council of Örebro, and Maria Johansson, County Council of Östergötland, for letting them utilise the database of the original questionnaire study. This study was supported for publication by "The authors' foundation" at Malmö University.

AUTHOR CONTRIBUTIONS

R.P.: main author, responsible for planning the study and statistical analysis, together with the statistician. E.W.: main supervisor, conducted the main revision of the manuscript. D.B. and B.F.: contributed valuable comments. All the authors approved the final manuscript.

ADDITIONAL INFORMATION

Competing interests: The authors declare no competing interests.

Publisher's note: Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

REFERENCES

1. Socialstyrelsen (Swedish Agency of Health and Welfare). In Swedish: Nationella PlaneringsStödet 2013—tillgång och efterfrågan på vissa personalgrupper inom hälso-och sjukvård samt tandvård (National Planning Support 2013—Supply and Demand for Certain Personnel Groups Within Healthcare and Dental Care). Available online at: <http://www.socialstyrelsen.se/Listor/Artikellista/Attachments/18961/2013-1-18.pdf>. Accessed Feb 2019.
2. TLV (The Dental and Pharmaceutical Benefits Agency). In Swedish: Tandvårdsmarknaden (The Dental Market). Available online at: <https://www.tlv.se/tandvard/Tandvardsmarknaden/>. Accessed Feb 2019.
3. Ekbäck, G. & Ördell, S. In Swedish: Munhälsa och tandvård, TE-studierna—befolkningsenkäter i Örebro och Östergötlands län (Oral Health and Dental Care, TE Studies—Population Surveys in Örebro and Östergötland County). Available Online at: <https://www.regionorebrolan.se/Files-sv/Örebro%20lans%20landsting/Tandvard/Tandvårdsenheten/Rapporter/TE-studierna%20-%20Munhälsa%20och%20tandvård.pdf>. Accessed Feb 2019.
4. Unell, L., Söderfeldt, B., Halling, A. & Birkhed, D. Explanatory models for oral health expressed as number of remaining teeth in an adult population. *Community Dent. Health* **15**, 155–161 (1998).
5. Unell, L., Söderfeldt, B., Halling, A., Paulander, J. & Birkhed, D. Oral disease, impairment and illness; congruence between clinical and questionnaire findings. *Acta Odontol. Scand.* **55**, 127–132 (1997).

6. Unell, L., Söderfeldt, B., Halling, A. & Birkhed, D. Attitudes to and experience of dental care among 50-year-olds in two Swedish counties. *Swed. Dent. J.* **23**, 87–96 (1999).
7. Brennan, D. S., Do, L. G. & Slade, G. D. Caries experience of adults attending private and public dental clinics in Australia. *J. Pub. Health Dent.* **71**, 2–37 (2011).
8. Pinto, R., de Abreu, M. & Vargas, A. Comparing adult users of public and private dental services in the state of Minas Gerais, Brazil. *BMC Oral Health* **14**, 100 (2014).
9. Widström, E. & Linden, J. Treatment provided in the public dental service and by private dentists in Finland. *Oral Health Dent. Manag.* **17**, 1024 (2018).
10. Koch, B. In Swedish: Tandvårdsförsäkringens tillkomst och förändring (The origin and change of the Swedish Dental Care Insurance System). *Sven. Med. Tidskr.* **18**, 86–88 (2014).
11. Socialstyrelsen (Swedish Agency of Health and Welfare). In Swedish: Statistik om tandhälsa 2017 (Statistics on Dental Health 2017). Available online at: <https://www.socialstyrelsen.se/Lists/Artikelkatalog/Attachments/20972/2018-5-16.pdf>. Accessed May 2019.
12. Försäkringskassan (Swedish Social Insurance Agency). In Swedish: Antal åtgärder per år och dess medianpriser, 2009—Tabell 4 (Number of measures per year and their median prices, 2009—Table 4). Available online at: <https://www.forsakringskassan.se/statistik/ovrigaersatt/tandvard>. Accessed Feb 2019.
13. Sveriges Riksdag (The Swedish Parliament). In Swedish: Lag (2008: 145) om statligt tandvårdsstöd. svensk författningsamling 2008: 145 (The Act (2008: 145) Governing State Dental Care. Swedish Constitution Collection 2008) Available Online at: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-2008145-om-statligt-tandvardsstod_sfs-2008-145. Accessed June 2017.
14. Norderyd, O. et al. Oral health of individuals aged 3–80 years in Jönköping, Sweden during 40 years (1973–2013). II. Review of clinical and radiographic findings. *Swed. Dent. J.* **39**, 69–86 (2015).
15. Jansson, H., Norderyd, O., Papias, A. & Wahlin, Å. Secular trends over 40 years of periodontal health and disease in individuals aged 20–80 years in Jönköping, Sweden: repeated cross-sectional studies. *J. Clin. Periodontol.* **45**, 1016–1024 (2018).
16. R Core Team. *R: A Language and Environment for Statistical Computing* (R Foundation for Statistical Computing, Vienna, Austria, 2017).
17. Valutakurser (Currency Exchange Rates). Available online at: <http://www.valutaomvandlare.com>. Accessed May 2019.
18. SCB (Statistics Sweden). In Swedish: Lönestatistik årsbok 1992 (Wage Statistics Yearbook 1992). Available online: https://www.scb.se/Grupp/Hitta_statistik/Historisk_statistik/_Dokument/SOS/Loner/Lonestatistik-arsbok-1992.pdf. Accessed May 2019.
19. SCB (Statistics Sweden). In Swedish: Statistikdatabasen (Statistical Database). Available online at: http://www.statistikdatabasen.scb.se/pxweb/sv/ssd/START__HE__HE0110__HE0110A/SamForvInk1/table?tableViewLayout1?txid=3333c1a8-d99d-4a76-94ee-07e3f60908d7. Accessed May 2019.
20. Landfeldt, E., Zethraeus, N. & Lindgren, P. Standardized questionnaire for the measurement, valuation, and estimation of costs of informal care based on the opportunity cost and proxy good method. *Health Econ. Health Policy* **17**, 15–24 (2019).
21. Ekback, G. & Ordell, S. Self-perceived taste disturbance: a 20-year prospective study of a Swedish 1942 birth cohort. *Gerodontology* **34**, 180–186 (2017).
22. Widström, E., Komu, M. & Mikkola, H. Longitudinal register study of attendance frequencies in public and private dental services in Finland. *Community Dent. Health* **30**, 143–148 (2013).
23. Ståhlhake, K. Self-perceived oral health, dental care utilization and satisfaction with dental care. *Swed. Dent. J. Suppl.* **190**, 1–155 (2007).
24. Pälvärinne, R., Birkhed, D. & Widström, E. The Public Dental Service in Sweden: an interview study of chief dental officers. *J. Int. Soc. Prev. Community Dent.* **8**, 205–211 (2018).
25. Andrén Andås, C. A New Payment Model in Swedish Dental Care. Available online at: <https://www.gu.se/handle/2077/39557>. Accessed June 2017.
26. Mundt, T. et al. Gender-dependent associations between socioeconomic status and tooth loss in working age people in the Study of Health Pomerania (SHIP), Germany. *Community Dent. Oral. Epidemiol.* **39**, 398–408 (2011).
27. Socialstyrelsen (Swedish Agency of Health and Welfare). In Swedish: Årsrapport NPS 2008. En analys av barnmorskors, sjuksköterskors, läkares, tandhygienisters och tandläkares arbetsmarknad (Annual Report NPS 2008. An Analysis of Midwives', Nurses', Doctors', Dental Hygienists' and Dentists' Labour Market). Available online at: http://www.socialstyrelsen.se/Lists/Artikelkatalog/Attachments/8840/2008-131-10_200813110_rev1.pdf. Accessed Feb 2019.
28. Ståhlhake, K., Söderfeldt, B., Unell, L., Halling, A. & Axtelius, B. Patient satisfaction with dental care in one Swedish age cohort. Part I—descriptions and dimensions. *Swed. Dent. J.* **31**, 103–111 (2007).
29. Ståhlhake, K., Söderfeldt, B., Unell, L., Halling, A. & Axtelius, B. Patient satisfaction with dental care in one Swedish age cohort. Part II—What affects satisfaction? *Swed. Dent. J.* **31**, 137–146 (2007).
30. Hancock, M., Calnan, M. & Manley, G. Private or NHS general dental service care in the United Kingdom? A study of public perceptions and experiences. *J. Public Health Med.* **21**, 415–420 (1999).
31. Tuominen, R., Eriksson, A.-L. & Vahlberg, T. Private dentists assess treatment required as more extensive, demanding and costly, than public sector dentists. *Community Dent. Oral. Epidemiol.* **40**, 362–368 (2012).

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>.

© The Author(s) 2019

APPENDIX

50-åringars mun- och tandhälsa

i Örebro och Östergötlands län

ÖREBRO LÄNS
LANDSTING

Landstinget
i Östergötland

UNDERSÖKNING AV MUN- OCH TANDHÄLSA HOS 50-ÅRINGAR I ÖREBRO OCH ÖSTERGÖTLANDS LÄN

Mun- och tandhälsan har de senaste årtiondena kraftigt förbättrats i Sverige. Den förebyggande tandvården har byggts ut. Nya behandlingsmetoder har utvecklats. Tandvården ställs därför inför nya uppgifter. Man måste få aktuella kunskaper om efterfrågan, behov och inställning till tandvård, liksom om förekomsten av hälsoproblem som rör tänderna och munnen.

Landstingen har av riksdagen getts planeringsansvar för hela tandvården inom länen. Örebro och Östergötlands läns landsting har därför i samverkan med folktandvården och privattandvården beslutat genomföra en undersökning, som kan öka kunskapen om mun- och tandhälsa i länen. Ett syfte med undersökningen är också att göra det lättare för Dig att i framtiden få den tandvård Du vill ha.

Ansvariga för undersökningen är i Örebro län övertandläkare Lennart Unell och i Östergötland docent Arne Halling. Undersökningen omfattar alla 50-åringar i Örebro och Östergötlands län.

Vi vill be Dig att så snart som möjligt fylla i bifogade enkätformulär och sända tillbaka det i det portofria svarskuvertet. Deltagande i undersökningen är givetvis helt frivilligt. Det är dock mycket viktigt för möjligheterna att dra slutsatser från undersökningen att **alla** besvarar enkäten. En slumpmässigt utvald del av de personer som får denna enkät kommer senare att kallas till en enklare tandundersökning.

Undersökningen genomförs med tillstånd från Datainspektionen. De svar som lämnas skyddas av Sekretesslagen (Sekretesslagen 9 kap 4 § och sekretessförordningen 3 §). Bearbetningen av undersökningen kommer att ske på sådant sätt att uppgifterna i dataregistren och resultaten i redovisningen inte kan kopplas till någon enskild individ. Ditt namn och adress har vi fått från befolkningsregistret.

Om Du har frågor eller kommentarer kring undersökningen, eller behöver hjälp med att fylla i formuläret, kan Du ringa tandhygienist Ulla Sandahl i Örebro, 019-157144 kl 8.00 - 12.00 och tandhygienist Britt Öster i Östergötland, 013-228875 kl 9.00 - 17.00.

Vi tackar på förhand för Din medverkan !!

Berit Dahlström

Tandvårdsstyrelsens ordförande
Örebro Läns Landsting

Lars Olof Torfgård

Landstingsstyrelsens ordförande
Landstinget i Östergötland

UNDERSÖKNING AV MUN- OCH TANDHÄLSA HOS 50-ÅRINGAR I ÖREBRO OCH ÖSTERGÖTLANDS LÄN

ID _____

Först kommer några frågor om Din sociala situation

1. Kön

- ☐ Man
☐ Kvinna

2. Födelseland

- ☐ Sverige
☐ Nordiskt land
☐ Annat land, nämligen _____
☐ Vet ej

3. Boendeort

- ☐ Större tätort
☐ Mindre tätort
☐ Landsbygd

4.a. Yrke (ange så noggrant som möjligt, inte bara titel. För ej arbetande,
ange tidigare yrke)

b. Är Du i huvudsak sysselsatt som egen företagare ? ☐ Ja
☐ Nej

5. Hur mycket förvärvsarbetar Du i genomsnitt ?

- ☐ Heltid (mer än 35 tim/vecka),
☐ Deltid (mellan 15 och 34 tim/vecka)
☐ Mellan 1-14 tim/vecka
☐ Inte alls

6. Har Du skiftarbete?

- ☐ Ja
☐ Nej

7. Vilken utbildning har Du? ☐ Folkskola
☐ Realskola, folkhögskola, 2-årigt gymnasium eller dyligt
☐ Tre-eller fyraårigt gymnasium
☐ Högskoleutbildning
☐ Annan utbildning (Ange vilken)
-
-

8. Vilket civilstånd har Du för närvarande?

- ☐ Gift/sammanboende
☐ Ensamstående → Är Du ☐ Ogift
☐ Franskild
☐ Änka/änkling

Här följer några frågor om Din allmänna hälsa

9. Anser Du Dig vara fullt frisk?

- ☐ Ja - absolut
☐ Ja - i stort sett
☐ Nej - inte särskilt
☐ Nej - absolut inte
☐ Har ingen uppfattning

10. Anser Du att Ditt allmänna hälsotillstånd är bättre eller sämre jämfört med Dina jämnåriga ?

- ☐ Ja , mycket bättre
☐ Ja - i stort sett bättre
☐ Ungefär lika bra
☐ Nej -i stort sett sämre
☐ Nej - mycket sämre
☐ Har ingen uppfattning

11. Har Du använt något läkemedel under de senaste fjorton dagarna ?

- ☐ Ja
☐ Nej
☐ Minns inte

12. Har Du varit sjukskriven de senaste tre månaderna?

- ☐ Ja, sammanlagt mer än en vecka
- ☐ Ja, sammanlagt några dagar
- ☐ Ja, en gång
- ☐ Nej
- ☐ Minns inte

13. Har Du haft kontakt med läkare de senaste tre månaderna?

- ☐ Ja - flera gånger
- ☐ Ja - några gånger
- ☐ Ja, en gång
- ☐ Nej
- ☐ Minns inte

14. Vilka är Dina rökvanor ?

- ☐ Röker dagligen
- ☐ Röker vid enstaka tillfällen

- ☐ Har rökt, men slutat

- ☐ Har aldrig rökt

↓
 Antal cigaretter/dygn ca
 Antal pipstopp/dygn ca
 Antal cigarrer el
 cigariller/dygn ca

↓
 När slutade Du ?
☐ Mer än fem år sedan
☐ Ett till fem år sedan
☐ Mindre än ett år sedan

15. Vilka är Dina snusvanor ?

- ☐ Snusar dagligen
- ☐ Snusar vid enstaka tillfällen

- ☐ Har snusat, men slutat

- ☐ Har aldrig snusat

↓
 Antal dosor/vecka ca

↓
 När slutade Du ?
☐ Mer än fem år sedan
☐ Ett till fem år sedan
☐ Mindre än ett år sedan

Här följer ett antal frågor om Din mun och Dina tänder

16. Är Du i allmänhet nöjd med Dina tänder ?

- ☐ Ja, mycket nöjd
☐ Ja, i stort sett nöjd
☐ Nej, inte särskilt nöjd
☐ Nej, absolut inte nöjd

17. Kan Du tugga all sorts mat ?

- ☐ Mycket bra
☐ Ganska bra
☐ Mindre bra
☐ Dåligt

18. Är Du nöjd med utseendet hos Dina tänder ?

- ☐ Ja, mycket nöjd
☐ Ja, i stort sett nöjd
☐ Nej, inte särskilt nöjd
☐ Nej, absolut inte nöjd

19. Känner Du Dig torr i munnen ?

<p><u>på dagen:</u></p> <p> ☐ Ja, ofta
 ☐ Ja, ibland
 ☐ Nej, sällan
 ☐ Nej, aldrig </p> | <p><u>på natten:</u></p> <p> ☐ Ja, ofta
 ☐ Ja, ibland
 ☐ Nej, sällan
 ☐ Nej, aldrig </p> |
|---|--|

20. När hade Du tandvärk senast ?

- ☐ Under de senaste tre månaderna
☐ Under det senaste året
☐ Mer än ett år sedan
☐ Har aldrig haft tandvärk
☐ Minns inte

21. Har Du märkt om Dina framtänder ändrat läge i munnen under det senaste året ?

- ☐ Ja
☐ Nej

22. Har Du haft tandställning någon period i Ditt liv ?

- ☐ Ja
☐ Nej
☐ Minns inte

23. Vilket eller vilka av nedanstående munvårdsmedel använder Du ? Ange hur ofta Du använder varje medel.

	Sällan/ aldrig	En gång i veckan	En gång om dagen	Två gånger om dagen	Mer än två gångar om dagen
Tandborste	☐	☐	☐	☐	☐
Tandkräm med fluor	☐	☐	☐	☐	☐
Tandkräm utan fluor	☐	☐	☐	☐	☐
Tandstickor	☐	☐	☐	☐	☐
Tandtråd	☐	☐	☐	☐	☐
Fluortabletter	☐	☐	☐	☐	☐
Fluorskölning	☐	☐	☐	☐	☐
Munvatten med fluor	☐	☐	☐	☐	☐
Munvatten utan fluor	☐	☐	☐	☐	☐
Annat	☐	☐	☐	☐	☐

(Ange vad _____)

24. Hur många av Dina egna tänder (utom mjölkttänder) har Du kvar ?

- ☐ Alla tänder kvar → **Gå till fråga 25**
- ☐ Saknar någon enskild tand
- ☐ Saknar ganska många tänder
- ☐ Har nästan inga tänder kvar
- ☐ Är helt tandlös

24.a. Har Du någon gång förlorat en eller flera framtänder genom yttre skada eller olycksfall ?

- ☐ Ja
- ☐ Nej

24.b. Tycker Du att Din tandförlust påverkat Ditt utseende negativt ?

- ☐ Ja
- ☐ Nej

24.c. Har Din tandförlust lett till att Du tuggar sämre ?

- ☐ Ja
- ☐ Nej

24.d. Känns Din tandförlust som om Du förlorat en viktig del av Dig själv ?

- ☐ Ja
- ☐ Nej

25. Man kan ha många olika besvär från munnen och tänderna. Upplever Du för Din del att Du har något eller några av nedanstående besvär eller bekymmer? Tänk igenom och besvara varje exempel.

	Inga besvär	Vissa besvär	Ganska mycket besvär	Stora besvär
Tändernas färg	☐	☐	☐	☐
Tändernas form	☐	☐	☐	☐
Sneda eller utstående tänder	☐	☐	☐	☐
Över- eller underbett	☐	☐	☐	☐
För glest mellan tänderna	☐	☐	☐	☐
För trångt mellan tänderna	☐	☐	☐	☐
Sveda i munnen	☐	☐	☐	☐
Sår eller blåsor i munnen	☐	☐	☐	☐
Andförländningar	☐	☐	☐	☐
Smärta runt käklederna	☐	☐	☐	☐
Knäppningar eller knaster från käklederna	☐	☐	☐	☐
Svårigheter att äta stort	☐	☐	☐	☐
Tandavlossning/pressning	☐	☐	☐	☐
Blödning från tandköttet	☐	☐	☐	☐
Dålig andedräkt	☐	☐	☐	☐
Besvär från material i tandfyllningar	☐	☐	☐	☐
Smärta i tänderna	☐	☐	☐	☐

26. Har Du andra besvär än något eller några av de som nämns i föregående frågor ?

- ☐ Nej
☐ Ja, nämligen

Man kan ha olika inställning till sina tänder. Här följer några påståenden och åsikter som kan förekomma. Vi ber att Du anger Din inställning till dem:

	Instämmer absolut	Instämmer i stort sett	Instämmer i stort sett <u>inte</u>	Instämmer absolut <u>inte</u>
27. "Att ha vackra och perfekta tänder är mycket viktigt för hur man blir bemött av andra människor"	☐	☐	☐	☐
28. "Mindre skönhetsfel på tänderna har ingen betydelse, bara de fungerar"	☐	☐	☐	☐
29. "En tandlöshet som syns är något man bör skämmas för"	☐	☐	☐	☐
30. "Det spelar ingen roll hur man ser ut i munnen, bara man kan tugga den mat man tycker om"	☐	☐	☐	☐

Här följer så några frågor om Din tandvård

31. Var har Du de senaste fem åren huvudsakligen fått tandvård ?

- ☐ Privattandvård
☐ Folktandvård
☐ Ej fått tandvård
☐ Annat _____

32. Ungefär hur ofta går Du till tandvård ?

- ☐ Två eller fler gånger/år
☐ En gång/år
☐ Vartannat år
☐ Mer sällan

33. Ungefär hur mycket har Du själv betalat för Din tandvård det senaste året?

- ☐ Inget alls
☐ Mindre än 300 kr
☐ 301-1000 kr
☐ Mer än 1000 kr
☐ Minns inte

34. Har Du under det senaste året besökt

Tandhygienist ?

- ☐ Ja
- ☐ Nej
- ☐ Vet ej

Profylaxtandsköterska ?

- ☐ Ja
- ☐ Nej
- ☐ Vet ej

35. Har Du någon gång behandlats av specialisttandläkare ?

- ☐ Under det senaste året
- ☐ Under de senaste fem åren
- ☐ För mer än fem år sedan
- ☐ Aldrig
- ☐ Vet ej

36. Man kan ha många olika material och konstruktioner i fyllningar och tandersättningar. Hur ser det ut i Dina tänder ? Ange alla de alternativ som gäller för Dig ! Har Du:

- ☐ "Vita" fyllningar
 - ☐ Guld
 - ☐ Amalgam
 - ☐ Porslän
 - ☐ Rostfritt stål eller titan
 - ☐ Provisoriska fyllningar
 - ☐ Plast
 - ☐ Avtagbar delprotes
 - ☐ Helprotes i en käke
 - ☐ Helprotes i båda käkarna
 - ☐ Annat
-
-

37. Har Du fått Dina tänder lagade med amalgam under det senaste året ?

- ☐ Ja
- ☐ Nej
- ☐ Vet ej

38. Har Du under det senaste året frågat någon i tandvården om biverkningar från tandersättningsmaterial ?

- ☐ Ja ☐ Nej → Gå till fråga 39
 ↓ ☐ Minns inte → Gå till fråga 39

OM DU SVARAR JA på fråga 38

38.a. Anser Du att Dina frågor bemöttes korrekt ?

- ☐ Ja, absolut
☐ Ja, i stort sett
☐ Nej, inte särskilt
☐ Nej, absolut inte

39. Har Du det senaste året fått fyllningar eller kronor utbytt därför att Du upplevt att de orsakat problem för Dig ?

- ☐ Ja, alla jag har
☐ Ja, en del
☐ Ja, enstaka
☐ Nej

40. Har Du det senaste året begärt, men inte fått, fyllningar eller kronor utbytt därför att Du upplevt att de orsakat problem för Dig ?

- ☐ Ja
☐ Nej

41. Är Du allmänt nöjd eller missnöjd med den tandvård Du har erhållit tidigare ?

- ☐ Mycket nöjd
☐ I stort sett nöjd
☐ Ganska missnöjd
☐ Mycket missnöjd

42. Har Du i allmänhet haft möjlighet att besöka den tandläkare Du önskat få behandling av ?

- ☐ Ja, alltid
☐ Ja, för det mesta
☐ Bara ibland
☐ Nej, sällan
☐ Nej, aldrig

43. Tycker Du att det är viktigt att få gå till samma tandläkare/tandhygienist varje gång ?

- ☐ Ja, mycket viktigt
- ☐ Ja, ganska viktigt
- ☐ Nej, inte särskilt viktigt
- ☐ Nej, inte alls viktigt

44. Går Du regelbundet hos Din nuvarande tandläkare ?

- ☐ Nej
- ☐ Ja → Sedan hur länge ? år

45. Har Du någon gång under de senaste fem åren bytt eller velat byta tandläkare därför att Du varit missnöjd ?

- ☐ Ja, flera gånger
- ☐ Ja, någon enstaka gång
- ☐ Nej
- ☐ Minns inte

46. Gick Du regelbundet till tandläkaren under Din skoltid ?

- ☐ Ja, hela tiden
- ☐ Ja, något eller några år
- ☐ Nej, inte alls
- ☐ Minns inte

47. Hade Du någon riktigt obehaglig eller skrämmande upplevelse av tandvård under Din barndom och ungdom (upp till ca 20 års ålder) ?

- ☐ Ja, flera gånger
- ☐ Ja, någon enstaka gång
- ☐ Nej
- ☐ Minns inte

*Till slut kommer några frågor om Ditt senaste besök i tandvården.
Dina svar skall alltså **endast** gälla det besöket*

48. Skedde Ditt senaste tandvårdsbesök hos

- ☐ Folk tandvård
☐ Privattandvård
☐ Annat _____
☐ Minns ej

49. När skedde Ditt senaste besök?

- ☐ För mindre än 1 år sedan
☐ För 1 - 3 år sedan
☐ För 3 - 5 år sedan
☐ För mer än 5 år sedan

50. Vem tog initiativet till Ditt senaste tandvårdsbesök ?

- ☐ Du själv eller anhörig, t ex akutbesök, nybesök
☐ Tandvården, t ex regelbunden kallelse, återbesök.
☐ Minns ej

51. Vi vill veta hur Du upplevde Ditt senaste tandvårdsbesök i olika avseenden. Sätt ett kryss på varje linje mellan två motsatser, så att det anger vad Du kände vid Ditt besök:

smärtfritt	_____	olidlig smärta
inget obehag	_____	mycket obehagligt
helt lugn	_____	stor oro
bra omhändertagande	_____	dåligt omhändertagande

52. Ungefär hur lång tid tog Ditt senaste tandvårdsbesök ?

Resan till och från tandvården

_____minuter

Väntetid

_____minuter

Själva behandlingen

_____minuter

53. Fick Du vid Ditt senaste tandvårdsbesök information om något eller flera av följande ?

	Ja	Nej	Vet ej
Munhygien	☐	☐	☐
Kost	☐	☐	☐
Fluor	☐	☐	☐
Tobak	☐	☐	☐
Kostnad för behandling	☐	☐	☐

TACK FÖR DIN MEDVERKAN !!

ISBN 978-91-7877-037-3 (print)

ISBN 978-91-7877-038-0 (pdf)

ISSN 1650-6065

MALMÖ UNIVERSITY
205 06 MALMÖ, SWEDEN
WWW.MAU.SE