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CONTENTS

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Instructions to authors

Introduction
Swedish Dental Journal, the scientific journal of The Swedish Dental Association and the Swedish Dental Society, is published 4 times a year to promote practice, education and research within odontology. Manuscripts containing original research are accepted for consideration if neither the article nor any part of its essential substance has been or will be published elsewhere. Reviews (after consultations with the editors), Case Reports and Short Communications will also be considered for publication. All manuscript will be exposed to a referee process.

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Attitudes, awareness and perceptions on evidence based dentistry and scientific publications among dental professionals in the county of Halland, Sweden

A questionnaire survey

PER RABE [1], ANDERS HOLMÉN [2], PETTERI SJÖGREN [3]

Abstract

◎ The objective was to identify dental professionals' attitudes and awareness on evidence based dentistry (EBD), and to elucidate perceived barriers and views on how to move towards EBD. A questionnaire was sent to 290 dental professionals (dental hygienists, general dentists, specialist dentists) in the county of Halland, Sweden. The questionnaire consisted of closed questions and free text sections, related to attitudes, awareness and skills on databases, EBD, and terms related to scientific publications, as well as perceived barriers towards EBD. A majority of the respondents had a welcoming attitude towards EBD. The respondents perceived their colleagues less positive towards EBD. The respondents considered EBD, at least partly, useful in daily dental practice. With the exception of general dentists in private practice, a vast majority of the dental professionals thought that EBD would improve the care of their patients. Dental professionals in the county of Halland, in Sweden, had a welcoming attitude towards EBD, and indicated an open attitude for learning more about interpretation of evidence from scientific publications. The most commonly perceived barriers towards EBD, were 'lack of time' and 'poor availability of evidence'.

Key words

Dentistry, evidence based dentistry, questionnaire

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Attityder, kunskaper och beteenden kring evidensbaserad tandvård och vetenskapliga publikationer bland legitimerad tandvårdspersonal i Halland

PER RABE, ANDERS HOLMÉN, PETTERI SJÖGREN

Sammanfattning

Syftet var att studera attityder och upplevda hinder vid tillämpning av Evidensbaserad tandvård (EBD) i klinisk tandvård. En enkät bestående av öppna och slutna frågor sändes ut till samtliga 290 tandläkare och tandhygienister i Halland. Av dessa inkom svar från 220 (76 %). Majoriteten av respondenterna hade en positiv inställning till EBD, men upplevde att kollegornas inställning var mindre positiv. Respondenterna ansåg EBD vara helt eller delvis användbart i sin dagliga kliniska verksamhet. Majoriteten av offentliganställda och privatanställda tandhygienister samt offentliganställda tandläkare ansåg att EBD förbättrar/skulle förbättra vården av deras patienter. Detta ansåg inte privatpraktiserande tandläkare i samma utsträckning. Av respondenterna angav 72 % att de använde vetenskapliga artiklar som stöd vid kliniska beslut. SBU rapporterna ”Att förebygga karies”, (2000) och ”Kronisk parodontit-prevention, diagnostik och behandling”, (2004) hade lästs av 59 % respektive 57 % av respondenterna, och knappt hälften av respondenterna ansåg sig ha haft nytta av SBU rapporterna i sin kliniska verksamhet. Tandläkare och tandhygienister i Halland hade en överlag positiv inställning till EBD och till att utveckla sina färdigheter i tolkning av evidens från vetenskapliga publikationer. ”Brist på tid” och ”Dålig tillgång och information om vetenskapliga bevis” var de vanligast upplevda hindren för att tillämpa EBD i klinisk praktik.

Introduction

Evidence based dentistry (EBD) is defined as "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients" (1). In applied EBD the treatment plan should be based on scientific evidence, combined with the practitioners' clinical skills, and patient values (2, 3). In EBD results from well-conducted randomised controlled trials are considered the 'gold standard' for bringing evidence to clinical practice (1, 5, 6). Sometimes the results from several small, independent clinical trials are insufficient for providing evidence for a clinical question, and it may prove useful to collect and synthesise the evidence from clinical trials in a systematic manner. For this purpose, well conducted systematic reviews and meta-analyses are preferred in EBD (7). Since a dental clinician seldom has hours to spend on literature searches, it is necessary to be able to find the research evidence for clinical practice relatively quickly (7). Several biomedical databases are available for locating scientific publications, including the Cochrane Library, with a number of 'evidence based' databases (7, 8). The Medline database is the largest single database for biomedical references, indexing abstracts from scientific journals in the fields of dentistry, medicine, healthcare sciences and the preclinical sciences, among others (9). Textbooks may be used to find information about clinical treatment modalities, but are often biased by the authors' opinions and seldom contain data from the latest clinical trials (3). Journals of secondary publication and systematic reviews conducted by others, are perhaps the easiest ways of locating clinical evidence (8, 10). Although, high-quality systematic reviews are available for some interventions, for many routine interventions in dental practice evidence is scarce (5, 7). Therefore, to summarise the current best evidence collaboration groups have been developed around the world, initiated in Europe by the founding of the Cochrane Collaboration in Oxford and followed by Britain's Centre for Review and Dissemination in York, among others (1, 5, 7, 8). These collaboration groups search for and review existing evidence, but also point out areas where evidence is absent or scarce and where there is a need of further research (5, 7, 8). The Swedish Council on Technology Assessment in Health (SBU) has relatively recently conducted systematic reviews on 'Preventing dental caries' and 'Chronic periodontitis - Prevention, Diagnosis and Treatment', directed mainly to dental professionals.

For continuing professional education purposes, it is crucial to keep the dental professionals up-to-date with the latest clinical research evidence (7). However, successful implementation of EBD in clinical practice, requires knowledge about the current attitudes towards EBD among the dental professionals, as well as about their educational needs. Therefore, in order to establish a starting point for continuing education in EBD among dental professionals this questionnaire survey was initiated in the county of Halland in Sweden, with the overall aim to identify attitudes and awareness about EBD among dental professionals, and to elucidate perceived barriers and views on how to move towards EBD in clinical practice.

Material and methods

In October 2005 a questionnaire was sent to 290 dental professionals (91 dental hygienists, 182 general dentists, and 17 specialist dentists) in the county of Halland, in Sweden, that were available through address lists obtained from local branch organisations, kept at the regional centre of specialist dentistry, at the Halmstad County Hospital (Halmstad, Sweden). The address lists contained dental professionals at Public Dental Services (PDS), and at private practices, and represented roughly all of the dental professionals in the county of Halland, Sweden, with the exception of small number of individuals who were not available through the branch organisations. A covering letter for the questionnaire included a summary of the aim of the current study. Respondents who were not active in their dental profession (e.g. retired, or occupied with another profession) were asked to write 'not active in the profession' on the questionnaire and to return it in an enclosed return envelope. In addition, an Internet based alternative for responding to the questionnaire was provided with the Internet address given in the covering letter.

The questionnaire was modified from a previous survey among medical general practitioners in UK in 1997 (15), and consisted of closed questions related to attitudes, awareness and skills on databases, EBD, common terms related to scientific publications, as well as perceived barriers to practise EBD in dental practice. In addition, free text sections were available to describe which scientific journals the respondent used to read on a regular basis.

A first remainder was sent 2 weeks after the initial questionnaire, followed by a second remainder about 2 weeks later. After 2-3 additional weeks, at-

tempts were made to contact the remaining non-respondents by telephone to elucidate the main reasons for not responding to the questionnaire.

The questionnaires were processed using Automated Forms Processing (Eyes&Hands, Readsoft, Sweden) and SPSS 13.0 statistical software. The statistics were kept descriptive since the primary objective of this study was not to compare different categories of dental professionals. The original questionnaire was written in Swedish and can be obtained from the authors.

Results

Of the 290 questionnaires sent, a total of 220 replies were received (76 %). The replies were from 67 dental hygienists (74 %), 137 general dentists (75 %), and 16 specialist dentists (94 %). Of the respondents, 22 were not active in their dental profession (e.g. retired, occupied in another profession; 7 dental hygienists, 14 general dentists, 1 specialist dentist). Thus, a total of 198 questionnaires remained for analyses. The characteristics of the respondents are listed in Table 1. Among the 40 non-respondents (n=70) that were reached by telephone 31 stated a reason for not participating in this survey. Thus, the main reasons for not returning the questionnaire were 'lack of time' (n=13), 'not familiar to the topic' (n=4), 'does not respond to any questionnaires' (n=3), or 'too theoretical' (n=3).

Table 1. Characteristics of the respondents in relation to gender, age, and dental profession (percent within parenthesis)

Personal characteristics		Respondents (n=198*)		
		Dental hygienists (n=60)	General dentists (n=123)	Specialist dentists (n=15)
Men	<40 years	0 (0)	7 (6)	1 (7)
	40-59 years	0 (0)	49 (39)	6 (40)
	> 60 years	0 (0)	18 (15)	5 (33)
	Total	0 (0)	74 (60)	12 (80)
Women	<40 years	14 (23)	9 (7)	0 (0)
	40-59 years	45 (75)	35 (29)	1 (7)
	> 60 years	1 (2)	5 (4)	2 (13)
	Total	60 (100)	49 (40)	3 (20)
Practice form				
Public Dental Services		41 (68)	55 (45)	15 (100)
Private practice		19 (32)	68 (55)	0 (0)

*All questions were not answered by all respondents.

Estimated time spent on self studies related to own clinical practice

A majority of the dental hygienists and general dentists estimated that they spent between 0 to 1 hours per week on self studies related to their own clinical practice, both during working hours and outside working hours, whereas a majority of the specialist dentists estimated their time used for self studies to 1-3 hours per week, both during, and outside working hours (Table 2).

Attitudes towards EBD

A majority of the respondents had a positive attitude towards EBD, with the exception of general dentist in private practice (Table 3). However, within all professional categories, colleagues were generally perceived less positive towards EBD (Table 3). All of the respondents considered EBD, at least partly, useful in daily dental practice, and with the exception of general dentists in private practice, a vast majority of the dental professionals thought that EBD would improve the care of their patients (Table 3). The median estimated percentage range of EBD in own practice

Table 2. Estimated time spent on self studies related to own clinical practice during working hours and outside working hours among the respondents (n=198*, percent in relation to number of respondents to each question within parenthesis)

		Public Dental Services			Private practice	
Estimated time spent†		Dental hygienists (n=41)*	General dentists (n=55)*	Specialist dentists (n=15)*	Dental hygienists (n=19)*	General dentists (n=68)*
During working hours						
	0 h	17 (44)	24 (45)	1 (7)	10 (53)	28 (42)
	1 h	16 (41)	26 (49)	6 (40)	8 (42)	31 (47)
	>1 h	6 (15)	3 (6)	8 (53)	1 (5)	7 (11)
Outside working hours						
	0 h	10 (26)	12 (22)	1 (7)	4 (21)	6 (9)
	1 h	25 (64)	28 (52)	7 (47)	14 (74)	43 (63)
	>1 h	4 (10)	14 (26)	7 (46)	1 (5)	19 (28)

*All questions were not answered by all respondents. †Hours per week spent for self studies estimated by the respondents.

Table 3. Attitudes towards evidence based dentistry (EBD) among the respondents (n=198*, percent in relation to number of respondents to each question within parenthesis)

	Public Dental Services			Private practice	
	Dental hygienists (n=41)*	General dentists (n=55)*	Specialist dentists (n=15)*	Dental hygienists (n=19)*	General dentists (n=68)*
Attitude towards Evidence based dentistry (EBD)					
Totally positive about EBD	20 (83)	32 (74)	13 (87)	10 (67)	23 (44)
Neither positive or negative about EBD	4 (17)	11 (26)	2 (13)	5 (33)	29 (56)
Totally negative about EBD	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Perceived attitude of colleagues towards EBD					
Totally positive about EBD	14 (58)	18 (44)	8 (57)	7 (47)	12 (25)
Neither positive or negative about EBD	10 (42)	23 (56)	6 (43)	8 (53)	35 (73)
Totally negative about EBD	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)
Perceived usefulness of EBD					
Totally useful in daily dental practice	11 (46)	19 (44)	8 (53)	7 (47)	10 (19)
Partly useful in daily dental practice	13 (54)	24 (56)	7 (47)	8 (53)	43 (81)
Useless in daily dental practice	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
EBD would improve the care of patients	21 (88)	33 (79)	14 (93)	13 (93)	25 (50)
EBD would not change the care of patients	3 (13)	9 (21)	1 (7)	1 (7)	25 (50)
EBD would not improve the care of patients	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Estimated percentage of EBD in own practice					
0 %	0 (0)	1 (2)	0 (0)	0 (0)	1 (2)
1-20 %	2 (9)	5 (12)	0 (0)	2 (14)	12 (24)
21-40 %	2 (9)	12 (29)	4 (27)	2 (14)	10 (20)
41-60 %	6 (27)	14 (34)	5 (33)	2 (14)	12 (24)
61-80 %	9 (41)	5 (12)	2 (13)	5 (36)	13 (26)
>80 %	3 (14)	4 (10)	4 (27)	3 (21)	3 (6)

* All questions were not answered by all responders.

Table 4. Awareness and current use of evidence base dentistry (EBD), journals, reports, and scientific databases among the respondents (n=198*, percent in relation to number of respondents to each question within parenthesis)

	Public Dental Services			Private practice	
	Dental hygienists (n=41)*	General dentists (n=55)*	Specialist dentists (n=15)*	Dental hygienists (n=19)*	General dentists (n=68)*
Evidence based dentistry or medicine (EBDM)					
Previously read or heard about EBDM	24 (59)	43 (81)	15 (100)	15 (79)	53 (78)
Participated at a course about EBDM	11 (27)	16 (38)	6 (40)	6 (40)	12 (24)
Scientific journals					
Reads scientific journals on regular basis	10 (26)	40 (74)	14 (93)	4 (21)	47 (71)
Uses scientific publications for clinical decisions	22 (60)	39 (78)	15 (100)	13 (68)	54 (84)
The journal 'Evidence-Based Dentistry'					
Unaware of the journal	27 (68)	33 (64)	7 (47)	17 (90)	51 (75)
Aware, but does not read the journal	12 (30)	17 (33)	5 (33)	2 (11)	17 (25)
Reads the journal	1 (3)	1 (2)	3 (20)	0 (0)	0 (0)
Uses the journal for clinical decisions	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)
The Medline (PubMed) database					
Unaware of the database	16 (40)	9 (17)	0 (0)	8 (42)	31 (47)
Aware of, but does not search the in the database	16 (40)	22 (42)	1 (7)	7 (37)	28 (42)
Searches the database	8 (20)	19 (36)	11 (73)	4 (21)	6 (9)
Uses the database for clinical decisions	0 (0)	3 (6)	3 (20)	0 (0)	1 (2)
The Cochrane Collaboration					
Unaware of the organisation	34 (85)	32 (62)	5 (33)	17 (90)	48 (72)
Aware of the organisation, only by name	3 (8)	6 (12)	1 (7)	0 (0)	11 (16)
Aware of Cochrane Collaborations activities	3 (8)	14 (27)	9 (60)	2 (11)	8 (12)
The SBU reports †					
Has read the report 'Preventing dental caries'	24 (60)	31 (56)	4 (27)	11 (58)	40 (59)
Has had use of this report in clinical work	22 (55)	25 (46)	3 (20)	11 (58)	29 (43)
Has read the report 'Chronic periodontitis ...'	24 (60)	28 (51)	7 (47)	10 (53)	39 (57)
Has had use of this report in clinical work	19 (48)	24 (44)	3 (20)	9 (47)	30 (44)
Has not read any of these two SBU reports	9 (23)	18 (33)	7 (47)	7 (37)	18 (27)
Has not had use of any of these two SBU reports	9 (23)	15 (27)	8 (53)	5 (26)	0 (0)

* All questions were not answered by all responders. † The Swedish Council on Technology Assessment in Health (SBU) have published the EBD reports 'Preventing dental caries' and 'Chronic periodontitis - Prevention, Diagnosis and Treatment'.

was 61-80 % for dental hygienists, and 41-60 % for general dentists and specialist dentists (Table 3).

Awareness about EBD

A majority of the respondents had previously read or heard about EBD, and used scientific publications for clinical decisions (Table 4). In contrary to dental hygienists and general dentists, a majority of the specialist dentists searched the Medline database and were aware of the Cochrane Collaboration (Table 4). Apart from the specialist dentists, a majority of the respondents had read or used the EBD reports of the Swedish Council on Technology Assessment in Health (SBU) (Table 4).

Understanding of terms in EBD and in scientific publications

Among the dental hygienists and general dentists there were respondents who considered journals from their branch organisations to be scientific journals (e.g. *Tandläkartidningen*, *Tandhygienisttidningen*), a view not shared by the authors in this context. Thus, in all professional categories, the most frequently read scientific journal on a regular basis was the *Swedish Dental Journal*, reported by 2 dental hygienists (n=10), 44 general dentists (n=79), and 4 specialist dentists (n=8). The widest variation of different scientific journals was reported by the specialist dentists.

The terms related to EBD and scientific publications were understood, to at least some extent, by a majority of the respondents (Table 5). Moreover, when the term was not understood, a majority expressed a wish to understand the term (Table 5).

Perceived barriers and views on how to move towards practising EBD

The main perceived barrier for practicing EBD

Table 5. Understanding of terms in evidence based dentistry and scientific publications among the respondents (n=198*, percent in relation to number of respondents to each question within parenthesis)

	Public Dental Services			Private practice	
	Dental hygienists (n=41)*	General dentists (n=55)*	Specialist dentists (n=15)*	Dental hygienists (n=19)*	General dentists (n=68)*
Evidence based dentistry					
Unnecessary for me to understand	2 (5)	3 (6)	0 (0)	0 (0)	1 (2)
Do not understand but would like to	12 (31)	2 (4)	0 (0)	2 (11)	12 (19)
Some understanding	10 (26)	22 (42)	3 (20)	9 (47)	27 (41)
Understand and could explain to others	15 (39)	25 (48)	12 (80)	8 (42)	25 (39)
Systematic review					
Unnecessary for me to understand	4 (10)	4 (8)	0 (0)	0 (0)	5 (8)
Do not understand but would like to	9 (23)	8 (15)	1 (7)	5 (26)	16 (26)
Some understanding	18 (46)	20 (39)	7 (47)	7 (37)	28 (46)
Understand and could explain to others	8 (21)	20 (39)	7 (47)	7 (37)	12 (20)
Meta analysis					
Unnecessary for me to understand	3 (8)	8 (15)	0 (0)	0 (0)	7 (11)
Do not understand but would like to	28 (72)	25 (48)	4 (29)	13 (77)	41 (65)
Some understanding	3 (8)	12 (23)	3 (21)	4 (24)	9 (14)
Understand and could explain to others	5 (13)	7 (14)	7 (50)	0 (0)	6 (10)
Randomised controlled trial					
Unnecessary for me to understand	2 (5)	5 (10)	0 (0)	0 (0)	4 (6)
Do not understand but would like to	15 (39)	4 (8)	0 (0)	6 (33)	20 (31)
Some understanding	7 (18)	19 (37)	2 (13)	6 (33)	17 (27)
Understand and could explain to others	15 (39)	24 (46)	13 (87)	6 (33)	23 (36)
Strength of evidence					
Unnecessary for me to understand	2 (5)	5 (10)	0 (0)	0 (0)	4 (6)
Do not understand but would like to	14 (37)	13 (26)	0 (0)	5 (29)	25 (40)
Some understanding	12 (32)	14 (28)	6 (43)	8 (47)	21 (33)
Understand and could explain to others	10 (26)	19 (37)	8 (67)	4 (24)	13 (21)

* All questions were not answered by all responders.

among the dental hygienist and general dentists was 'lack of time', whereas the main perceived barrier for specialist dentists was 'poor availability and information about the evidence'. More than 2 out of 3 specialist dentists perceived no barriers for practicing EBD. With the exception of specialist dentists, a majority of the respondents considered the most important criteria for being able to practice EBD 'to use regionally or nationally developed evidence based guidelines'.

Discussion

Dental professionals in the county of Halland, in Sweden, had a welcoming attitude towards EBD, and indicated an open attitude for learning more about interpretation of evidence from scientific publications. The most commonly perceived barriers towards EBD, were 'lack of time' and 'poor availability of evidence'.

The high response rate in this questionnaire makes it plausible that the collected data are representative for dental professionals in the county of Halland, in Sweden. Moreover, the results of the current study are largely in line with a recent survey among dentists in another Swedish county (16).

The questionnaire revealed that dental hygienists and general dentists estimated between zero to one hour per week spent on self education related to clinical work, both during and outside working hours. Specialist dentists, however, estimated somewhat more time spent on self education.

With the exception of dentists in private practice, the respondents had an overall positive attitude towards EBD, but perceived their colleagues to be less positive than themselves. This was also evident in an earlier survey among medical general practitioners in Great Britain (15). One plausible explanation to these perceptions is that the dental professionals most negative towards EBD reside among the non-respondents, but influence their colleagues' perceptions in discussions about EBD.

Curiously, although comparisons between different professional categories were beyond the scope of this study, dentists in private practice seemed to have a less welcoming attitude towards EBD. Whether this finding is an artefact in this study, or representative for dentists in private practice will be interesting to clarify in future studies.

A majority of the respondents thought that evidence based practice would improve the care of their patients, which seems encouraging for successful implementation of EBD in routine dental practice.

For locating the evidence, specialist dentists seemed to be more used to conduct computer based database searches, but did not seem so interested in reading or using EBD guidelines made by others. It was also evident that specialist dentists were more familiar with reading and interpreting data from scientific articles. However, among the dental hygienists and general dentists there were respondents who considered journals from their branch organisations (e.g. *Tandläkartidningen*, *Tandhygienisttidningen*) to be scientific journals. Although, both of these journals do publish a number of peer reviewed articles, these journals were not deemed scientific journals in this context. *Swedish Dental Journal* was the most frequently read scientific journal in all professional categories, probably due to its branch organisation membership associated subscription, making the journal readily available for the dental professionals. Moreover, the *Swedish Dental Journal* publishes many research articles related to dentistry in Sweden.

A majority of the respondents had at least some understanding of terms related to EBD and scientific publications, and expressed an interest to learn more about the terms that were not understood. This positive attitude towards learning among the respondents, together with the overall positive view towards EBD, are encouraging for future planning of continuing professional education about EBD.

Among the obstacles for practicing EBD the major barriers that need to be dealt with seems to be the perceived lack of time, among the dental hygienists and general dentists, as also the poor availability and information about the evidence, perceived among the specialist dentists.

It is also important to acknowledge the different educational needs among specialist dentists and other categories of dental professionals. Therefore, it seems that continuing professional education needs to be arranged separately for different dental professional categories.

The continuing professional education should be directed towards teaching EBD methodologies. This however requires that those involved in the education should be trained in describing the evidence base for different interventions and in discussing how this information can improve the quality of dental care (7). In contrary to the traditional dental practice, uncertainty is more explicitly acknowledged in EBD and the treatment outcomes are not discussed in dichotomised terms of 'success or failure', but rather as probabilities of whether treatments

work or not (2, 4). At first sight this may seem to be a problem for clinical decision-making, but the practice of EBD opens up the option of realistic analyses of clinical situations. Clinical dental practice needs to be based on scientific evidence and professional skills, and the methods of EBD are useful for collecting evidence about clinical problems (2, 7, 14). Dental practice increasingly requires technological skills and special knowledge of dental professionals, due to continuously emerging treatment methods, whereas economic restraints in national healthcare systems worldwide necessitate the best quality of care at minimum cost (2). Patients, on the other hand, with increasing access to information, may prioritise differently, for example, by putting aesthetics before requirements of clinical effectiveness (2). Therefore, patient preferences (or informed consent) are increasingly important when different treatment options are discussed (1, 4).

To be successful, all of these aspects need to be included in continuing professional education, with a holistic view. Dental professionals in the county of Halland, in Sweden, had a welcoming attitude towards EBD, and indicated an open attitude for learning more about interpretation of evidence from scientific publications. The most commonly perceived barriers towards EBD, were 'lack of time' and 'poor availability of evidence'. Thus, these obstacles need to be approached when continuing professional education in EBD is planned. An initial step should involve development of local and regional EBD groups, composed of EBD interested dental researchers and practitioners, with the aim to educate the local dental professionals in basic skills of applied EBD, and to disseminate the latest clinical evidence to the dental profession to reveal the interventions that have the greatest impact on dental health.

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Evaluation of orthodontic treatment, retention and relapse in a 5-year follow-up

A comparison of treatment outcome between a specialist and a post-graduate clinic

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Abstract

◎ The aim of this study was to evaluate and compare orthodontic treatment between a specialist clinic and a post-graduate clinic.

A long-term follow-up study was done 5 years after orthodontic treatment ended. Eighty-one individuals treated at the Post-graduate clinic at the Department of Orthodontics, University Clinics of Odontology, Göteborg, and 84 individuals treated at the Orthodontic Specialist Clinic in Vänersborg, the county of Västra Götaland were examined. The Peer Assessment Rating (PAR) index was used on pre-, post-treatment and 5-year follow-up study casts.

The percentage reduction in weighted PAR (WPAR) scores after treatment and at the 5-year follow up did not differ significantly between the clinics. There were significant higher pre-, post-treatment and 5-year follow-up PAR and WPAR scores in patients from the Specialist Clinic as compared with patients from the Post-graduate Clinic. In the whole sample 97.6 % of the patients were *improved* or *greatly improved* after treatment and 95.8 % were still *improved* or *greatly improved* 5 years after treatment. Sixty-seven percent of the patients still had retainers in one or both arches at the 5-year follow-up.

The WPAR scores are one factor that indicates the high quality of the treatment process in both clinics. The higher post-treatment PAR scores in the Specialist Clinic may be because a larger number of patients were treated only in one jaw at this clinic.

Key words

Peer Assessment Ratiry Index

[1]Specialist Clinic of Orthodontics in Vänersborg, Sweden.

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Evaluering av ortodontisk behandling, retention och recidiv i en 5 års uppföljning: En jämförande studie av behandlingsresultat vid en specialist och en utbildnings klinik

LENA NYLÉN TOFELDT, ANN-CATRIN JOHNSSON, HEIDRUN KJELLBERG

Sammanfattning

Syftet med denna retrospektiva långtidsstudie, var att utvärdera behandlingsresultat vid en specialist- och en utbildnings klinik 5 år efter avslutad ortodontisk behandling.

Åttioen patienter behandlade vid ST utbildningskliniken vid Odontologen i Göteborg, och 84 patienter behandlade vid tandregleringskliniken i Vänersborg deltog i studien. Peer Assessment Rating (PAR) index beräknades på modeller tagna före, omedelbart efter och 5 år efter behandling.

Resultatet visade ingen statistiskt signifikant skillnad mellan klinikerna avseende procentuell förbättring vid avslutad behandling eller 5 år efter avslutad behandling. Patienterna behandlade vid specialistkliniken hade högre PAR index och WPAR index, såväl före, efter, som 5 år efter avslutad behandling.

I studien påvisade 97,6 % förbättring eller väsentlig förbättring av bettavvikelsen efter behandling och 95,8 % var fortfarande förbättrade eller väsentligt förbättrade 5 år efter behandling. Fem år efter avslutad behandling hade 67 % av patienterna kvar sin retention, i en eller båda käkarna.

Av resultaten framgår att kvalitén på behandlingen var hög vid båda klinikerna. Emellertid var PAR och WPAR index något högre vid specialistkliniken, dvs behandlingsresultaten var något sämre, såväl efter behandling som 5 år efter behandling vid uppföljningstillfället. Detta resultat bero troligen på att fler patienter i specialistkliniken behandlades enbart i en käke.

Introduction

The quality of orthodontic treatment is about not only good morphological and functional improvement and long-term stability after treatment but also about the appropriate selection of patients. To maintain high treatment quality it is important to evaluate orthodontic treatment results continuously, using either subjective or objective methods. With objective methods, it is possible to compare treatment efficiency, treatment results and relapse.

Different criteria and measurements have been proposed, including the American Board of Orthodontists (ABO) scoring index, the index of Complexity, Outcome and Need (ICON), the Index of Treatment Need (IOTN) and the Peer Assessment Rating (PAR) index or weighted PAR (9, 11, 19). The most commonly used tool to assess orthodontic outcomes is the PAR index, an occlusal index designed to measure how much a patient deviates from normal alignment and occlusion (17). *Richmond et al.* (1992) found that specialist orthodontic treatment, on average, reduced the weighted PAR (WPAR) score by 78% (18). The authors reported that a 30% reduction is the minimal requirement for a case to be judged as improved. However, the degree of improvement is also dependent on the selection of the patients. To be able to get a high percentage reduction in the WPAR value and an improved outcome it is crucial to select patients with an initial high pre-treatment score.

Of special importance is to keep the quality of education in post-graduate clinics high in order that students are exposed to optimal treatment procedures. Studies from post-graduate clinics in Norway, the Netherlands and the United Kingdom (3, 5, 13) have shown high quality results with a reduction in WPAR scores ranging from 69-77%. Specialist clinics in Sweden have shown even higher figures, with reductions as high as 83% (15, 16) and 87% (6).

An additional important factor when evaluating treatment is the expected degree of anticipated stability years after treatment. Several studies have shown that post-treatment relapse is frequent (2, 5, 13). The degree of post-treatment changes estimated by the PAR index varies among studies depending on retention time, malocclusion, post-treatment occlusion and growth changes (2, 5, 8, 13, 16,). This post-treatment change is very unpredictable, and WPAR reductions 5 years after treatment have been shown to vary between 49 and 64% from pre-treatment (2, 5, 13).

The aim of this study was to compare the orthodontic treatment outcome between a specialist clinic and a post-graduate clinic, as well as to evaluate the change in occlusion 5 years after treatment.

Subjects and methods

This investigation was conducted at the orthodontic Specialist Clinic in Vänersborg, the County of Västra Götaland and at the Post-graduate Clinic, Department of Orthodontics, University clinics of Odontology, Göteborg, Sweden. In the Specialist Clinic the first 167 patients who finished fixed orthodontic treatment in 1998 were selected to participate in the study. Of these patients, 56 didn't get invitations because they were unable to reach or casts were missing, 27 were unwilling to participate (lived too far away or had no time), Data were obtained from 84 patients. At the Post-graduate Clinic all 113 patients treated with fixed appliance that finished orthodontic treatment in 1997 (18) and 1998 (95) were invited. Thirty patients were excluded because their current addresses were unknown (n=13) or because they were noncompliant (n=18). Thus, 81 patients were examined from the Post-graduate Clinic. Clinical photographs and study models were obtained at the examination.

The following information was recorded for each patient:

- pre-, post-treatment and 5-year follow-up assess ments (i.e. PAR and WPAR scores)
- age at treatment start (years)
- treatment duration (years)
- extracted teeth
- retention appliance
- retention duration
- change in WPAR score

Patients' age at debonding and treatment durations is presented in Table 1. The distribution of different treatments in the two clinics is presented in Table 2. A malocclusion was determined *greatly improved* when the post-treatment WPAR was at least 22 points lower than the pre-treatment WPAR, *improved* when the score was 30% lower and *not improved* if reduction was less than 30% after treatment cessation (19).

Table 1. Age at debonding and treatment time for all patients. S = Specialist Clinic, P-g = Post-graduate Clinic

	Mean year	SD	Min	Max	n
Age at debonding, P-g	17.8	4.7	13.0	42.7	81
Age art debonding, S	17.0	4.6	12.3	39.2	84
Treatment time, P-g	1.7	0.5	0.4	3.0	81
Treatment, S	1.8	0.7	0.7	3.5	84

Table 2. Distribution of patients as a function of type of treatment and retention.

	Total n	Post-graduate clinic %	clinic %
Full upper and lower fixed appliance	140	88.9	81.0
Single arch fixed appliance	25	11.1	19.0
Patients treated with extractions	98	58.0	60.7
Retainers in one arch at the 5-yearv follow-up maxilla/mandible	57	16.0/27.2	13.1/13.1
Retainers in both arches atthe 5-year follow-up	55	37.0	31.0

The two first authors (LNT and ACJ), who had not been involved in the treatment process, assessed the PAR and WPAR indexes. Both authors were trained for three years in using the indexes, and calibration in using the indexes was made between the authors.

Statistical analyses

Differences between the clinics were analysed using the unpaired t-test for PAR and WPAR scores. A paired t-test was performed to analyse differences in PAR and WPAR scores between stages. P values of ≤ 0.05 were considered to indicate a significant difference.

Error of method

To assess intra- and inter-examiner reliability the PAR scores was evaluated by two of the authors (LNT and ACJ) on 10 randomly selected pre-treatment casts. The scoring was repeated after 3 months. The mean difference between replications (S_e) was calculated using Dahlberg's formula $S_e = \sqrt{\sum (a_2 - a_1)^2 / 2n}$, where a_1 denotes the first measurement and a_2 the second measurement. Intra-examiner agreements were high for both dentists, with a mean difference between replications of only 0.8 (ACJ) and 0.9 (LNT) PAR points. The mean inter-examiner difference was 1.0 PAR point. In two pre-treatment cases the inter-examiner differences were more than 2.0 PAR points. The reason for these larger differences was different scores in alignment in the posterior segment (molar and premolar region).

Results

There were significantly higher WPAR (p=0.01) and PAR (p<0.0001) scores in the patients at the Specialist Clinic than at the Post-graduate Clinic at the pre-treatment (T0), post-treatment (T1) (p<0.05), and 5-year follow-up (T2) (p<0.05) (Table 3). The mean treatment time, however, did not differ between the patients in the two clinics (Table 1).

The mean percentage improvement of WPAR during orthodontic treatment (T0-T1) was 80.4% in patients at the Post-graduate Clinic and 78.3% in the patients at the Specialist Clinic. These scores were reduced to 72.2% (Post-graduate Clinic) and 69.2% (Specialist Clinic) at the 5-year follow-up assessment (T0-T2) (Table 3). The differences between the clinics in percentage improvement were not statistically significant. As can be seen in Table 3, patients

Table 3. Pre-treatment (T0) WPAR scores and percentage WPAR change at the post-treatment)t1) and 5-year follow-up (t2) assessment for all patients and different subgroups.
P-g= Post-graduate Clinic, S C= Specialist Clinic

					Percentage reduction in WPAR							
	P-g T0		S C T0		P-g T0-T1		P-g T0-T2		S C T0-T1		S C T0-T2	
	WPAR	n	WPAR	n	Mean	SD	Mean	SD	Mean	SD	Mean	SD
All patients	27.0	81	30.8	84	80.4	0.24	72.2	0.21	78.3	0.19	69.2	0.22
Fuller upper and lower fixed appliances	27.6	72	33.0	68	82.4	0.23	74.5	0.19	80.3	0.19	71.8	0.23
Single arch fixed appliances	21.0	9	21.7	16	64.1	0.27	53.4	0.24	70.0	0.16	58.0	0.17
Extractions	30.1	47	33.2	51	83.3	0.16	72.8	0.20	81.5	0.17	74.8	0.20
No extractions	22.9	34	27.1	33	76.3	0.31	71.3	0.22	73.4	0.20	60.5	0.23
Ratainers in both arches at T2	31.1	29	34.3	26	86.0	0.11	79.5	0.17	83.2	0.16	77.6	0.18

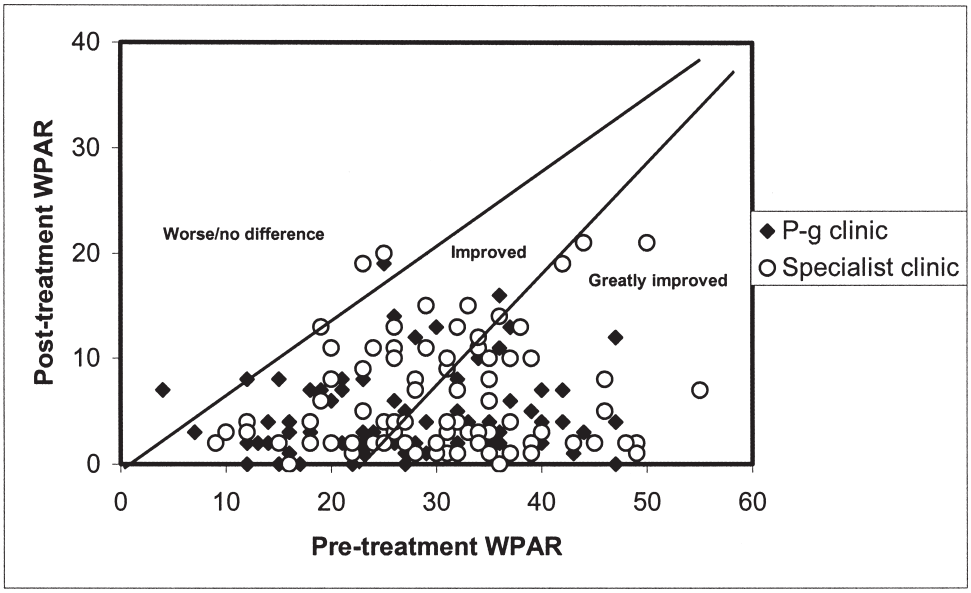

Figure 1. Nomogram showing pre- and post-treatment WPAR scores for all 165 patients.

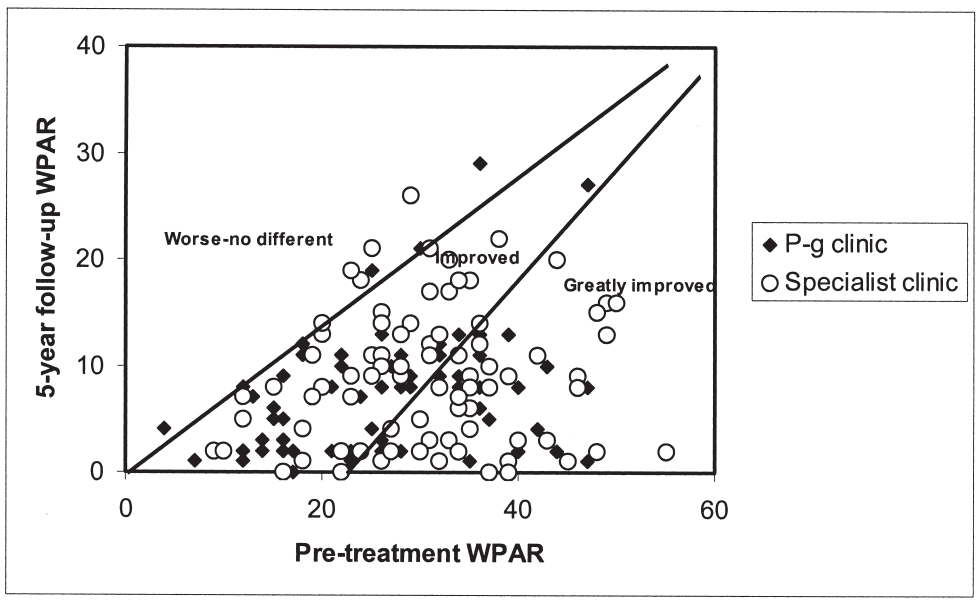

Figure 2. Nomogram showing pre-treatment and 5-year follow-up WPAR scores for all 165 patients

with dual arch fixed appliances produced the greatest reduction in WPAR score at T1 and maintained the greatest reduction in WPAR score at T2.

The mean WPAR at T1 for the whole sample was 5.4, a value that increased to 7,7, 5 years after treatment. Fifty-eight percent of the patients were greatly improved by the treatment (having a reduction of 22 scores or more at T1); and 43.6% of the patients still showed *great improvement* at T2 (Figures 1 and 2). The percentage of patients who did not improve or their status was worsened by the treatment (with a percentage reduction of less than 30%) was 2.4% at T1 and increased to 4.2% at T2.

Thirty-two per cent of the patients had retainers in both arches at T2. The change in WPAR from T1 to T2 for patients who had retainers in both arches at T2 was 2.8 points less compared with patients that had been without retainers more than 2 years (individuals treated with fixed appliances in both arches) (Table 4).

A slightly larger number of patients were treated with extraction in the Specialist Clinic than in the

Table 4. Relationship of pre-treatment (To), post-treatment (T1) and follow-up (T2) mean WPAR scores for all patients treated with fixed appliances in both arches as a function of the presence or absence of retainers.

WPAR patients treated with a fixed appliance in both arches				
	To	T1	T2	n
Retainers in both arches	32.7	5.2	6.8	55
Retainer in mandible at T2	25.9	5.0	6.4	33
Without retainers > 2 years at T2	29.4	6.4	10.8	33

Post-graduate Clinic (Table 2). There was a significant difference in mean WPAR at To but not at T1 or T2 between the extraction and non-extraction groups in the whole sample.

Discussion

No significant differences in treatment quality were found between the Post-graduate and Specialist Clinics as assessed by WPAR and PAR indices. However, there were significantly higher pre-, post-treatment and follow-up (5 years after the end of treatment) PAR and WPAR scores in the Specialist Clinic. A higher percentage of patients were treated with fixed appliances in both aches in the Post-graduate Clinic than in the Specialist Clinic, which might be the reasons for the differences. About two thirds of the patients still had a retainer in one or both arches 5 years after the conclusion of treatment.

This study was designed as a long-term follow-up study. To be able to compare the present results with those of other studies, a 5-year follow-up period was chosen. The patients included in the study were not pre-selected. The rather high dropout rate was understandable for a 5-year follow-up study (27% in Post-graduate clinic and 49.7% in the Specialist clinic) in this age group in that teenagers frequently move from where they live, especially from a smaller town (Vänersborg). The causes for the dropouts (could not be reached by phone, had no time to attend an examination, or lived too far away) give us no reason to believe that the results of the study would have been different if the dropouts had been included. A survey of the dropout material showed that the pre- and post-treatment measures did not differ from the patients who were examined.

A statistically significant difference in pre-treatment PAR scores was observed between the clinics, indicating more severe malocclusions and thereby a higher PAR score (7) for those patients who received treatment in the Specialist Clinic. The reason for this difference might be that the general practitioners in the surroundings of the Specialist Clinic take care of some patients with less advanced fixed appliance treatments, which is not the case around the Postgraduate-Clinic. However, the Specialist Clinic investigated in the present study also had higher pre-treatment PAR than studies from other Swedish specialist clinics (6, 15, 16) even though these clinics were also in an area where general practitioners conduct orthodontic treatment with fixed appliances. The high pre-treatment PAR therefore indicates differences in patient selection criteria's. The higher post-treatment and 5-year follow-up WPAR scores in the patients from the Specialist Clinic could be due to the high pre-treatment score in this group. *Bergström* (4) found that treatment outcome became less favourable, i.e. the PAR scores were higher, with the complexity and level of difficulty of the treatment. Studies (8, 13) have shown that treatment with a fixed appliance in both arches yields the best treatment result. This could be another reason for higher end PAR scores for patients treated in the Specialist Clinic as they were more frequently treated only in one arch.

The percentage improvement in WPAR in the patients treated with a fixed appliance in both arches in the present study doesn't differ from previous studies from post-graduate or specialist clinics (8, 13, 15).

The percentage of *greatly improved* patients after treatment at the Post-graduate Clinic was slightly higher than in studies of other post-graduate clinics (5, 13), even though the treatment time was shorter in the present study. This finding indicates not only a high standard but also high treatment efficacy.

Treatment time and number of visits were very similar at the two clinics and nearly the same as studies done at other Swedish specialist clinics (6, 15, 16).

At the 5-year follow-up, the mean percentage improvement of WPAR for the whole sample slightly decreased, even though two thirds of the patients still had retainers. The largest post-treatment change was for patients that had been without a retainer in the mandible for at least 2 years, a finding consistent with *Al Yami* (2) who found that the largest post-treatment change occurred during the first 2 years post-retention. The change in WPAR that occurred between T1 and T2 was similar for patients with a retainer only in the maxilla at T2 as for patients with no retainers the last 2 years. No differences in WPAR change were noted between patients with retainers in both arches at T2 or patients that had a retainer

only in the mandible at T2. This finding implies that the largest change after retention is in the mandible, which is in agreement with the findings of *Little*, (14) and *Glenn* (10).

In this study only 2.4 % of all patients had less than a 30 % reduction in WPAR after treatment was complete, indicating no benefit from the treatment. This value is slightly lower than those found by *Prytz Berset* (16) (2.7%) and *Birkeland* (5) (3.7%). It is not reasonable to expect all patients to be successfully treated. In this respect, *Ahlgren* (1) and *Lilja-Karlander* (12) found that about 10% of orthodontically treated patients required residual orthodontic treatment because they were not successfully treated. Four individuals in the present study had a WPAR reduction after treatment of less than 30%. Three of these patients had a rather large overjet before treatment, with only a minor reduction of the overjet after treatment. The fourth patient had a low pre-treatment PAR score.

Conclusions

1. Substantial improvements in WPAR scores were observed during treatment in both clinics.
2. Statistically significant differences in both PAR and WPAR were found in the pre-, post-treatment and 5-year follow-up between the clinics, with the Specialist Clinic consistently showing higher scores.
3. The mean WPAR score increased slightly at the 5-year follow-up. The change was least in patients who still had retainers in the mandible, indicating that the largest relapse occurs in the alignment of the lower front teeth.
4. Of the whole sample, 95.8 % were still *improved* or *greatly improved* 5 years after treatment. No statistically significant differences were revealed between the clinics.

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Graduates´ characteristics and professional situation

A follow-up of five classes graduated from the Malmö Model

DANIEL BENGMARK, MARIA NILNER, MADELEINE ROHLIN

Abstract

This study describes some characteristics of graduates of the five first classes from the Malmö dental programme, their overall experience of the programme, and their professional situation. Of 166 graduates (graduated 1995–1999) who were invited to participate, 128 responded (response rate 77%). The questionnaire queried participant characteristics, undergraduate education, and professional situation.

The median age of the respondents at graduation was 26 years (range: 24–43 years, female: 56%). One-fourth of the respondents were born outside Sweden. Two-thirds of the respondents answered that they enrolled in the dental education because they wanted to become a dentist. Most respondents (97%) were working as a dentist, and a majority (82%) worked full-time. The respondents thought their dental education had prepared them well for their profession. About one-third of the respondents worked outside Sweden; the majority had been born outside of Sweden. The respondents' satisfaction with their professional situation, which was high overall, correlated to how much they were able to influence their work situation. About one-fourth expressed interest in specialist training. Respondents differed on the topic of research education: 64% of the female graduates and 42% of the male graduates were interested.

We conclude that the respondents were satisfied with their professional situation as a dentist and that most were interested in postgraduate education.

Key words

Dental education, employability, evaluation, problem-based learning, profession

Faculty of odontology, Malmö University, Malmö, Sweden

Karakteristika hos examinerade och deras professionella situation. En uppföljning av fem kurser som examinerats som tandläkare i Malmö-modellen

DANIEL BENGMARK, MARIA NILNER, MADELEINE ROHLIN

Sammanfattning

Syftet med denna studie var att beskriva de examinerade från de fem första kurserna av den problembaserade tandläkarutbildningen i Malmö, deras generella syn på utbildningen och deras professionella situation. Av totalt 166 examinerade (examinerade åren 1995-1999) svarade 128 på den utskickade enkäten. Frågeformuläret inkluderade frågor av demografisk karaktär, de examinerades syn på utbildningen och deras professionella situation.

De svarandes medianålder när de examinerades var 26 år (24-43 år) och andelen kvinnor var 56 %. Cirka en fjärdedel var födda utanför Sverige. Två tredjedelar av de svarande angav att de valde tandläkarutbildningen för att de ville bli tandläkare. Nästan samtliga (97 %) arbetade som tandläkare och cirka en tredjedel arbetade utanför Sverige. De som arbetade utanför Sverige var i högre utsträckning också födda utanför Sverige. De svarande menade att utbildningen gav en god förberedelse för deras professionella situation. Deras tillfredsställelse med sin professionella situation, som var hög överlag, korrelerade till deras möjligheter att påverka sin arbetssituation. Cirka en fjärdedel uttryckte intresse för specialistutbildning. När det gällde forskarutbildning uttryckte 64 % av kvinnliga svarande intresse jämfört med 42 % av männen.

Vår slutsats är att de svarande överlag var nöjda med sin professionella situation och majoriteten av dem var intresserade av efter- och vidareutbildning.

Introduction

Follow-up studies of programmes in higher education are important. Future students enrolling in higher education are entitled to be informed about graduates' prospects following completion of a programme. Graduates' employability, which is a key issue in debates on higher education across Europe (10), is probably an important consideration for students when choosing a programme. Follow-up studies are also valuable because the information and reports of former students' experiences can be used to improve a programme's quality. But to our knowledge, follow-up studies in dental education and data on graduates' employability and professional situation are scarce.

A new undergraduate dental programme was introduced in 1990 in Malmö – the Malmö model. The programme, which was previously described by *Rohlin et al* (6), is in line with a problem-based learning approach (5). Students' acceptance of responsibility for their own learning and learning in context are central aspects of this approach. So a context that closely resembles the students' future professional situation is practiced during all learning activities in the Malmö model.

Participation in higher education is associated with privilege and enhanced life opportunities. Sweden, like many other countries, is therefore concerned about enabling people from a wide range of backgrounds to continue their education. On a national level, the gender distribution of the dental students – about half were female (52%) in 1997 (3) – was somewhat lower than of general university students (female: 57%) (8). The share of students with a foreign background who were enrolled in university studies was 11% in 1994/1995 (8). This study defines foreign background as persons born in Sweden with two foreign-born parents or persons who were born abroad (2). We found no data on what share of dental students in the 1990s had a foreign background.

The aim of the present study was to describe some characteristics of graduates of the five first classes from the Malmö dental programme, the graduates' overall experience of the programme, and their professional situation.

Materials and Methods

The participants

All graduates (n=166) of the first five classes of the Malmö dental programme, graduation years 1995–1999, were invited to participate. The questionnaire was sent out in the spring of 2002. According to Swedish legislation (Personal Data Act 1998:204), all participants were informed about the study. They agreed to the processing of their personal data and gave their signed consent to participate in the study. Foreign background was defined as persons born in Sweden with two foreign-born parents or persons who were born abroad (2).

The questionnaire

The self-completed questionnaire comprised 20 questions on aspects of the graduates' characteristics, choice of education, and educational institution, on their undergraduate dental education, their present professional practice, and support for and interest in postgraduate education.

The graduates were asked to answer open-ended and short questions. One question used a 5-point scale. For other items they were asked to mark on a visual analogue scale (VAS) with endpoints ranging from "Not at all" (0) to "Quite well" (10). The questionnaire was piloted with a group of students and with staff members of the Faculty of Odontology and other faculties of Malmö University for ease of reading and completion.

Administration of the questionnaire

The questionnaire was distributed by post to the graduates. Reply envelopes were enclosed with first-class stamps. Addresses to graduates who lived in Sweden were obtained from Riksskatteverket (The Swedish National Tax Board) and from student colleagues. Addresses to graduates who lived in the UK were obtained from the General Dental Council in the UK and to graduates who lived in other countries from colleagues or families.

Response rate

The first response rate was 67%. After the first reminder, the response rate was 73% and after the second reminder, 77%, resulting in 128 respondents. The response rate ranged from 94% amongst the first cohort that graduated in 1995 to 61% amongst the fourth cohort that graduated in 1998. Non-responding graduates consisted of 10 females (median age 30) and 28 males (median age 29). In this group, 27 graduates were born outside Sweden (median age 29) and 11 in Sweden (median age 30). Some responding graduates did not answer all questions. So the number of graduates answering each question varied.

Table 1. Age at graduation - median and (range) - of respondents who graduated 1995-1999 in Malmö.

	1995 n=32	1996 n=22	1997 n=25	1998 n=26	1999 n=23	Total n=129
Born outside Sweden	32 (28-38)	31 (28-34)	31 (25-41)	26 (24-34)	27 (24-36)	28 (24-41)
Born in Sweden	26 (24-42)	25 (24-39)	28 (24-43)	26 (24-40)	26 (25-32)	26 (24-43)
Total	27 (27-42)	26 (24-39)	28 (24-43)	26 (24-40)	27 (24-36)	26 (24-43)

Statistics

A chi-square test was used to compare frequency distributions of different groups. Pearson's chi-square test was used to estimate the association between scores of different groups of graduates born in and outside the Nordic countries and between male or female. p-values < 0.05 were considered significant.

Results

Graduates' characteristics

Fifty-six per cent of the 128 respondents were women. One-fourth (n = 34) of the respondents (and both parents) were born outside Sweden. Of the responding graduates born outside Sweden 20 were from in Iran. The female/male ratio was 1.4:1 among graduates born in Sweden and 1:1 among those born outside Sweden.

Only 91 respondents answered the question on parents' and siblings' experience with higher education. Of the female respondents, mothers of 33 of 43 respondents (77%) and fathers of 39 of 48 (81%) had experience of higher education. Corresponding figures for the male respondents were 30 of 43 respondents (70% of the mothers) and 33 of 41 (80% of the fathers). Of the respondents born outside Sweden, mothers of 22 of 28 (79%) and fathers of 17 of 27 (63%) had experience of higher education. Corresponding figures for respondents born in Sweden were 46 of 58 (79% of the mothers) and 50 of 61 (82% of the fathers).

Table 1 presents the age of the respondents at graduation. Median age was 26 years (range 24 to 43 years). Overall, females were 2 years younger than males (26 years vs. 28 years). The median age of respondents born outside Sweden at graduation was 28 years and 26 years for those born in Sweden.

Why dental education and overall impression of the dental education

Most respondents (67%) wanted to become a dentist. There was a slight difference between respondents born outside (78%) and those born in Sweden (63%). Of the respondents born in Sweden, 19% answered that they had not been accepted to another programme in higher education compared to 9% of the respondents born outside Sweden. The main reason for choosing the Malmö programme was the living situation (84% of the respondents

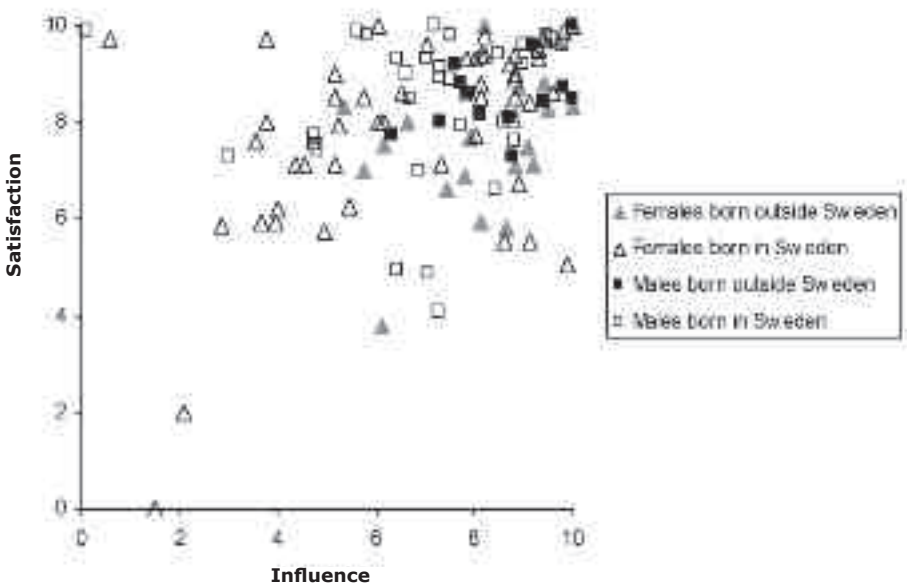

Figure 1. Respondents' answers to the questions "Are you satisfied with your present professional situation?" (Satisfaction) and "In your opinion, are you able to influence your present professional situation?" (Influence). The respondents were asked to mark on a VAS with endpoints "Not at all" (0) and "Quite well" (10) (n= 123 respondents).

answered that they lived in the region).

The respondents' answer to the question "Did the education prepare you for your profession as a dentist?" was positive. The mean score was 7.7 (range 1.0–9.9) for female and 8.0 (range 3.0–10.0) for male respondents. Corresponding figures were 8.1 (range 3.7–9.8) for respondents born outside and 7.8 (range 1.0–10.0) for respondents born in Sweden.

Professional situation

Most respondents (97%) worked as a dentist. Only four did not: two worked in the medical industry, one had studied to become a pilot, and one was a student. The respondents' satisfaction with their professional situation was high overall (Figure 1). Male respondents reported a higher level of satisfaction (mean value 8.6) than females (mean value 7.7) ($p \leq 0.005$). Three respondents, who were female and born in Sweden, reported satisfaction levels below 4. The mean value was 8.1 for respondents born outside Sweden and 8.2 for respondents born in Sweden. The graduates' professional satisfaction correlated to how much they were able to influence their present situation (Figure 1). Respondents born outside of Sweden reported having a higher level (mean value 8.4) of influence than respondents born in Sweden (7.0) ($p \leq 0.003$).

Table 2 presents the respondents' professional situation. Fourteen respondents born in Sweden did not report whether they worked in or outside Sweden. Overall, 37 respondents (35% of respondents to the question) worked abroad (30 in Great Britain; 4 in Norway; and 1 each in Finland, Germany and Iceland). Of those who reported that they worked outside Sweden, more graduates were born outside than in Sweden ($p < 000.1$). Twenty of the female (32%) and 17 of the male (37%) respondents worked outside Sweden. Most respondents (82%) worked full-time. Most respondents (70%) were employed full-time in public oral health care or combined public work with work in a private clinic (Table 2). Forty per cent of the male respondents worked in private clinics compared to 14% of the female respondents ($p < 0.01$). A higher proportion of females born in Sweden than females born outside Sweden worked part-time ($p < 0.01$).

Most respondents (60%) worked with adult and child patients while 9% of the respondents worked exclusively with patients with special needs. Remaining respondents worked with all three categories or combinations. Their monthly income (equivalent to full-time work in 2002) ranged from SEK 15,000 to more than SEK 50,000. Of respondents working outside Sweden, 88% reported a monthly wage of more than SEK 50,000 compared to none of the respondents working in Sweden. Respondents working in Sweden reported a monthly wage in the range of SEK 25,000–29,999 (67%), SEK 20,000–24,999 (16%), and SEK 30,000–39,999 (13%); the overall range was SEK 15,000–40,000.

Expressed interest in postgraduate education

Respondents born outside and respondents born in Sweden expressed their interest to a similar degree in specialist training, 24% and 22%, respectively. There was no differences regarding interest in specialist training between the sexes (78% of respondents). But more females (64%) were interested in research education than males (40%, $p < 0.05$).

Discussion

Methodological considerations

The response rate was high, particularly if one bears in mind that several graduates lived outside Sweden. The group of non-responding graduates differed from that of respondents in that most non-

Table 2. Respondents´professional siyuation. All respondents did not answer all questions. The number after "/" presents the number answering the question.

	Born outside Sweden		Born in Sweden	
	Female (n=19)	Male (n=17)	Female (n=52)	Male (m=38)
Work in Sweden	6/19	5/15*	36/43	24/31
Work outside Sweden	13/19	19/15*	7/43	7/31
Work full-time	17/19	13714	35/49	29/32
Work in public dental health	8/16	3/14	34/48	20/36
Work in private practice	3/16	6/14	6/48	14/36
Work both public & private	5/16	4/14	4/48	2/36
Other answers	0	1/14	4/48	0

*One respondet worked both in and outside Seden and id therefore not listed.

responding graduates were born outside Sweden. One explanation could be that more graduates born outside Sweden probably also worked outside Sweden. If so, it was more difficult to ascertain that they actually received the questionnaire. Also, considering that 3–5 years had passed since graduation, the response rate was high. We waited 3–5 years before querying our graduates about their perception of their education and their viewpoints on their professional situation, so that they had enough time to experience different aspects of their profession. The response rate, however, seemed to be unaffected by whether 3, 4, or 5 years had passed since the response rate of the 1995 graduates was higher than of the 1998 and 1999 graduates.

The questionnaire included 20 main questions with several alternatives, and the response rate to each question varied. During the analysis, we realized that some questions or answer choices lacked important data or were ambiguous, which resulted in a higher drop-out of answers. For instance, respondents could not answer "No" to the question on experience of higher education within the family. Furthermore, the definition of "higher education" varies with time in a country and between different countries. For example, some professional education, such as teacher's education, is classified as higher education in some countries and not in others.

Graduates' characteristics

Female participation in higher education is increasing. This seems to be true for graduated dentists as well. The female share of dentists in Sweden was 43% in 1995 and 48% in 2003 (7). The female share of examined dental students on a national level increased from 50% in 1995 to 53% in 1999 and 58% in 2003 (3).

In 2000, the median age of students beginning Swedish university studies was 22.3 years compared to 23.6 years for dental students at Malmö University. These figures correspond well with the median age of dental students reported in our study. This implies that most respondents, as happens with other students, do not start their studies in higher education immediately after high-school graduation. Thus, students who enter a dental programme today may have other experience and knowledge than before.

The definition of foreign background used in different studies varies. Despite this, we think it is worthwhile to explain the respondents' answers related to this aspect. In the academic year 2003/04, about 14% of those admitted to higher education had a foreign background (9). This is about the same proportion as in the population at large, which indicates that transfer rates to higher education of people with foreign background and people of Swedish descent are similar (4). There are, however, significant differences among programmes regarding the proportion of students with foreign backgrounds. Medicine and dentistry are subjects with large proportions of first-year students with foreign background (8). There are also big differences between nationalities. As was the case among the respondents of our study, students with an Iranian background are well represented in higher education compared to other nationalities at Swedish universities (8). The ratio of foreign graduates of the Malmö dental programme was higher than in higher education in general but consistent with that of dental students on the national level. In the academic year 2001/2002, 51% of the dental students in Sweden had a foreign background (8). All respondents in our study who were born outside Sweden also had both parents born outside Sweden, without exception. The current situation may be different. Most dental students with a foreign background were born in the 1980s, and many of them in Sweden. Parental education is a highly significant factor compared with all other variables for whether children decide to pursue higher education (11). Not only the chance to enrol in higher education but also students' success in higher education differ among students when different aspects of the parental generation are considered, such as the parents' educational level (4). Among the graduates in the present study, the proportion whose parents had experience of higher education was high and similar among respondents born outside and those born in Sweden.

Dental education and professional situation

Two-thirds of the respondents wanted to become dentists and therefore chose the dental programme. This figure is similar to the frequency of 5th year students in a French dental programme who answered that dental school was their first choice (1). Most students chose an education situated near their homes, in their home region.

The respondents' satisfaction with their professional situation was very positive and correlated to the amount of influence they had in their working situation. Figure illustrates this, and the outliers regarding influence (values under 4) seem to be well represented by females born in Sweden. Being able to

influence one's working situation has recently been presented as an important part of healthy work for female unpromoted general practice dentists (12).

A higher proportion of respondents born outside Sweden worked outside of Sweden compared to respondents born in Sweden. Two out of three respondents born outside Sweden choose to work outside of Sweden. The number of respondents working outside of Sweden also increased with time since graduation.

Females worked part-time more often than males. The reason for this is probably related to parental leaves. Also, a higher proportion of females born in Sweden worked part-time than females born outside Sweden. This could probably be partly explained by the fact that they worked in the UK, where paid parental leave is shorter than in Sweden.

We conclude that the respondents were satisfied with their professional situation as a dentist and that most of them were interested in postgraduate education.

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Patient satisfaction with dental care in one Swedish age cohort

Part II – what affects satisfaction

KATRI STÅHLNACKE[1], BJÖRN SÖDERFELDT[2], LENNART UNELL[1], ARNE HALLING[3], BJÖRN AXTELIUS[2]

Abstract

◎ The aim of this study was to investigate satisfaction with dental care in relation to dental care factors, recent dental care experiences, past dental care experiences, general health factors, oral health factors and socio-economic factors and all over time.

All persons born in 1942 in two counties in Sweden, Örebro and Östergötland, were surveyed by post in 1992 at the age of 50, and resurveyed at the age 55. There were 5363 persons responding at both times, constituting the study group. A conceptual theoretical model was constructed to be used as a framework in the analysis. Multiple regression analysis and contingency tables were used.

Factors related to satisfaction with dental care were: care organisation, cost for care, visit to dental specialist, time spent in waiting room, regular attendance, reception at dental clinic, feelings of anxiety, taking part of school dentistry, smoking, oral health factors, dental appearance and being dissatisfied 5 years previously. Change between the two study years was affected by perceived oral health, experiences from the most recent dental visit and care organisation.

Oral health related factors and dental care factors like cost for care and care organisation were related to satisfaction with dental care. Likewise were experiences from the most recent dental visit and to some extent past care experiences like school dentistry. Almost no correlation was seen between socio-economic factors and satisfaction.

Key words

Longitudinal survey, questionnaire design, regression analysis, theoretical models

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Tillfredsställelse med tandvård i en svensk cohort
Del II

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Sammanfattning

Syftet med föreliggande arbete var att utifrån en teoretisk förklaringsmodell analysera vilka faktorer som påverkar tillfredställelsen med tandvård i en svensk cohort. Studiegruppen består av personer födda 1942 som vid undersökningstillfället var bokförda i Örebro eller Östergötlands län. Denna cohort har studerats med hjälp av enkätundersökningar vart 5:e år; 1992, 1997, 2002, 2007, en kommande undersökning är planerad till 2012. De två första studieåren, 1992 och 1997, har i detta arbete används som plattform inför fortsatta analyser (5363 personer svarade vid dessa båda tillfällen och utgör cohorten).

En teoretisk förklaringmodell har skapats för att vara till hjälp i analysen av vilka faktorer som påverkar tillfredställelsen med tandvård i denna cohort. Förändringar mellan de två första studieåren undersöks också. Modellen har byggts upp med sex huvudrubriker: tandvårdsfaktorer, nyligen upplevda vårderfarenheter, tidigare vårderfarenheter, allmänna hälsofaktorer, orala hälsofaktorer och socioekonomiska faktorer. Analyserna utförs med korstabeller och multipla regressionsanalyser.

Faktorer som var relaterade till tillfredställelse är: vårdorganisation, kostnad för vården, besök hos specialist, att vara regelbunden besökare, mottagandet på kliniken, väntrumstid, deltagande i skoltandvård, oroskänslor, rökning, oral hälsa, dentalt utseende. Starkast samband finns mellan att ha varit missnöjd 1992 med att vara det även 1997. Inget samband alls finns med någon av de undersökta socioekonomiska faktorerna. Något som kan tolkas positivt, att tandvården behandlar alla lika, oavsett kön, etnisk börd, utbildningsnivå, yrke osv.

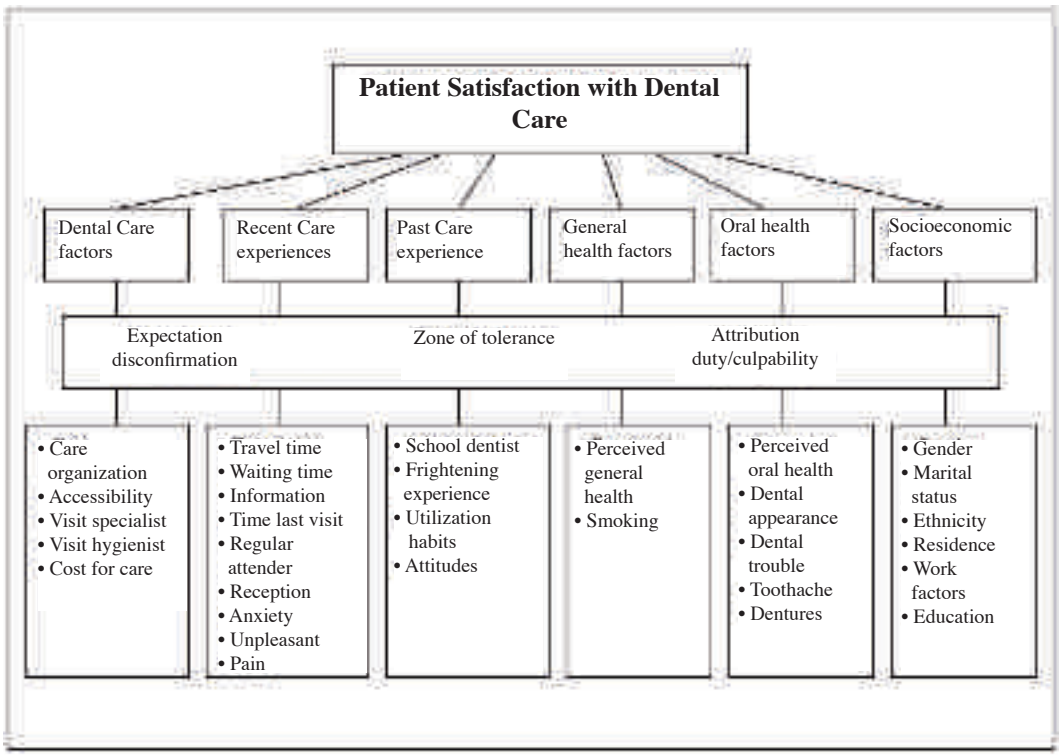
Introduction

The dental service is supposed to give patients the best care possible. Who is to decide what the best care is, should it be determined by dentists, by patients, by researchers, by care economists or by somebody else? In looking for answers to these questions, patient surveys of satisfaction with dental care become important.

There is no generally accepted definition of the concept of patient satisfaction (9, 13, 15). *Sitzia &Wood* (13) point out that since many satisfaction studies are conducted in very specific contexts, it is understandable that no standard classification ever seems entirely appropriate. There are, however, theories emerging from research in marketing, sociology, psychology and from health care. In models of consumer satisfaction, the "Disconfirmation Theory" dominates (1, 9). This theory suggests mainly that the consumer compares the perception of the service to prevailing expectations. Satisfaction is then judged by the extent of disconfirmation, the difference between expectation and the performance or quality of the service. There is, for example, a "zone of tolerance": customers know that services may differ and the extent to which they are willing to accept this variation becomes the zone of tolerance, the range in which customers do not particularly notice services failures. When service falls outside the range, the customer manifests satisfaction or dissatisfaction (1, 9). Another satisfaction theory is the "Attribution Theory", which is used to explain the seeming contradiction when a patient having had a bad dental experience, still expresses a high overall satisfaction rating. Attribution theory deals with two concepts, duty and culpability. Duty is the belief about what the service should and should not do. Culpability is whether the service is to blame if anything goes wrong. It is said that attribution may be a filter through which all negative experiences must pass before evaluation is made (1, 10).

There are many conceivable factors affecting satisfaction with dental care. Explanatory models of satisfaction have been designed, mostly deriving from medical care. *Baker* (4) constructed a pragmatic model of patient satisfaction in general practice, focusing on six explanatory boxes: Elements of care, Priorities of patients, Interaction with health care, Characteristics of patients and Requirements for personal care. *Andersen* (2) made an expanded version of the "Andersen Behavioral Model of Health Services Utilization" which is used in analyses of oral health outcomes. The expanded model conceptuali-

Figure 1. Theoretical model in the analysis of satisfaction with dental care.



zes health behaviors as intermediate dependent variables, which in turn influence oral health outcomes, like patient satisfaction. In this paper, a conceptual model for satisfaction with dental care is constructed to be used as a theoretical framework in the analyses. The investigated aspects are gathered under six headlines/explanatory boxes; dental care factors, recent dental care experiences, past dental care experiences, general health factors, oral health factors and socio-economic factors, presented in Figure 1.

The aim of this study was primarily to continue to investigate satisfaction with dental care, using one Swedish cohort population. Satisfaction with dental care will be investigated in relation to dental care factors, recent dental care experiences, past dental care experiences, general health factors, oral health factors and socio-economic factors. Changes in satisfaction with care during this study period will also be analyzed.

Material and methods

Population

All people born in 1942 in two Swedish counties, Örebro and Östergötland, received a mail questionnaire in 1992 and in 1997. There were 5363 (63.5 %) persons who completed the questionnaire in both 1992 and 1997, establishing a study group. Details of both the data collection and the non-response analysis are thoroughly described in two recent papers (16, 17) as well as in the part I paper of this satisfaction study.

Questionnaire

The questionnaire was constructed in 1991 using other population studies as example. Detailed information about construction and administration is found in (16, 18). The questionnaire was designed in different sections, containing questions about socio-economic conditions, general health, oral conditions, attitudes, experiences and use of dental care and about the most recent visit to dental care. All questions were the same in 1992 and 1997. In this paper, the following variables were used, divided into dependent and independent variables.

Dependent variables

An index for satisfaction with dental care was designed as a dependent variable in a regression model. In order to improve the discrimination and approximation of the interval scale, included variables were tested in factor analysis, where the results were presented in the Part I-paper. The analyses were stable and had high internal consistency according to Cronbach's alpha. The following questions and response alternatives were included:

- Are you in general satisfied with the care you have received previously:
  very satisfied, rather satisfied, rather dissatisfied, very dissatisfied.
- Have you generally been able to visit the dentist you want to:
  yes always, yes mostly, just sometimes, no seldom, no never.
- Have you any time during the last five years changed or wanted to change dentist because you have been dissatisfied:
  yes several times, yes occasionally, no, do not remember.

The range of this index was between 3 and 12. In the question "Have you any time during the last five years changed or wanted to change dentist because you have been dissatisfied", the response alternatives "no" and "do not remember" were put together due to very few answers in the "do not remember" group and to the similarities of the alternatives.

Independent variables

Dental care Factors:

Public care organisation (reference category: private care)
No visit to a dental specialist (reference category: visit to dental specialist)
No visit to a dental hygienist (reference category: visit to dental hygienist)
High cost for care (range 1-4)

Recent care experiences:

Long travel time to dental care (range 1-3)
Long time spent in waiting-room (range 1-3)
Information given about cost (reference category: no information given about cost)
Long time since most recent visit (range 1-4)
Not regular attenders at present dentist (reference category: regular attenders at present dentist)
Most recent visit experiences: (range 1-3)
Bad reception
Great anxiety
Very unpleasant
Unbearable pain

Past care experiences:

No school dentistry (range 1-3)
No frightening experience from dentistry during childhood (reference category: frightening experience from dentistry during childhood)
Utilization habits- no frequent visitor (range 1-4)

Attitude– strong believe in appearance (range 2-8)
Attitude –strong believe in function (range 2-8)

General health factors:
Bad self perceived general health (range 1-4)
Smoker (reference category: non smoker)

Oral health factors:
Bad self perceived oral health (range 1-13)
Not satisfied with dental appearance (range 1-4)
Big perceived troubles from mouth/teeth (range 17-51)
Toothache during the last year (reference category: no toothache during the last year)
Wearing dentures (reference category: not wearing dentures)

Socio-economic factors:
Gender-woman (reference category: man)
Marital status-married or cohabiting (reference category: single)
Ethnicity-born outside Sweden (reference category: born in Sweden)
Place of residence (reference category Rural)
  Town residence
  City residence
Occupational status (reference category Blue collar worker)
  Lower white collar
  Higher white collar
  Entrepreneurs
Education (reference category Primary school)
  High school
  College
High dissatisfaction 1992 (range 3-12)

Statistical analysis

Linear regression analyses were performed with the index "Satisfaction with dental care" as dependent variable, where a high value stands for high degree of dissatisfaction. Changes between the two study years are in the presented table marked with either a + sign for increased association or a – sign for decreased association for all independent variables having a significant association at any of the two study times. Reproducibility can be seen as a test of reliability. These items were repeated after a period of five years, with stable results. Internal consistency was tested with factor analysis in the part I paper.

Change in satisfaction with dental care between 1997 and 1992 was also analyzed. To be used in a regression analysis, a dependent variable "Change in satisfaction with dental care" was constructed. This was done by subtracting the satisfaction index from 1992 from the one in 1997, giving a range of -8 to +8 , where the + values represent an increased satisfaction and the – values a decrease.

In all regression models, six groups of independent variables were used: dental care factors, recent dental care experiences, past dental care experiences, general health factors, oral health factors and socio-economic factors. A test for multicollinearity was performed. Each year, 1992 and 1997, was analyzed separately. Due to listwise deletion of missing data, the number of respondents for final analysis varies in the models. In analysis of such non-response, there were differences so that men and those less satisfied were somewhat over-represented among those that had been excluded in the models due to the deletion of missing data. The results can therefore be somewhat underestimated. Data analysis was done by SPSS (Statistic Package for the Social Sciences, Inc. Chicago, USA, version 12.0.1).

Results

In multiple regression analysis, with satisfaction with dental care as dependent variable (Table 1), it shows from the explanatory box ***Dental care factor*** (Fig. 1) that having a public care provider increased dissatisfaction with half a unit in 1992 (b=0.56) and with about a quarter of a unit in 1997 (b=0.29). There was a decreased dissatisfaction for having a public care provider between the two study years. In 1992, 74 % of this cohort had a private care provider, in 1997 that number had decreased to 70 %. Having a high cost for care also increased dissatisfaction but to a smaller degree (b=0.06, b=0.13). High cost increased dissatisfaction between the two study years. For the explanatory box ***Recent dental experiences,*** the strongest association was seen for those not being regular attenders to the present dentist with increased dissatisfaction, both in 1992 and 1997. Having had no school dentistry during childhood was the only ***Past dental care experiences*** that significantly affected satisfaction and it increased dissatisfaction. To note is that this variable has a range from 1-3 (having had school dentistry all the time, just a few years, not at all). The regression coefficient gives the change for each step in that "scale". A bit surprising is that having had frightening experience from dentistry during childhood did not affect satisfaction. Another peculiar result is that being a smoker under the ***General health factors*** increased satisfaction with dental care, although only significantly

for 1997. ***Oral health factors*** showed that having a bad perceived oral health strongly increased dissatisfaction with care with changes of *b*=0.163 in 1992 and *b*=0.090 in 1996 for each step in the range going from 1-13. Also having big troubles from mouth or teeth or having toothache experiences increased dissatisfaction. No significant relation could be established to satisfaction with dental care for any ***Socio-economic factors***. Gender, ethnicity education or occupation did not affect satisfaction with dental care while reported ***Satisfaction in 1992*** did. Having a high degree of dissatisfaction in 1992 strongly affected dissatisfied in 1997 as well.

Analyses were done of factors affecting change in satisfaction with dental care. Change in satisfaction was set as a dependent variable in a linear regression analysis (Table 2). Among ***Dental care factors,*** care organization was related, public care decreased satisfaction. The independent variable ***Recent dental care experiences,*** long time spent in waiting-room and bad reception at the clinic gave decreased satisfaction, while feelings of anxiety at most recent visit increased satisfaction. ***Oral health factors*** were related to change in satisfaction for both self-perceived oral health and troubles from mouth or teeth. None of the independent ***Socio-economic factors*** affected change significantly, while high dissatisfaction in 1992 increased satisfaction in 1997.

Discussion

In the part I study on this Swedish cohort, dealing with descriptions and dimensions of satisfaction with dental care, it was concluded that satisfaction with dental care was high, both generally and concerning the most recent dental visit. These results were congruent with many other studies (14, 15). There are no corresponding congruent results concerning what kind of factors influencing patient satisfaction with dental care (5, 6, 13, 19).

The aim of this study was to investigate satisfaction in relation to various factors. In order to do that a theoretical model was constructed. This model included many dimensions of the concept of satisfaction with dental care. Some of the results were rather straight forward and with expected answers, like that having a bad selfperceived oral health and troubles from mouth and teeth increased dissatisfaction. It is more difficult to understand why feelings of anxiety, unpleasantness and pain at the most recent visit did not affect expressed satisfaction more negatively than they did. The attribution theory, dealing with duty and culpability, can be one possible explanation for these results, with its effect as a filter or a booster. As well as one slip-up from dental care can be ignored, going through the filter, a bad experience can be boosted and difficult to forget. The disconfirmation theory suggests that the perception of a service is judged by the prevailing expectations, making past dental care experiences important. Frightening incidents, from childhood or later, may affect expectations for many years to come. Despite the fact that as many as 62 % in this population had frightening experiences from dentistry during childhood, no significant correlation was seen with satisfaction. Still, having had no school dentistry at all showed a correlation with increased dissatisfaction.

Another rather surprising result is that none of the included socio-economic variables showed any significant correlation to satisfaction with dental care or to change in satisfaction during 1992 and 1997. That can be interpreted positively so that no big differences are made whether you are man or woman, highly educated or not, being an immigrant or not, and so on. Previous findings concerning associations between socio-economic factors and satisfaction with dental care are not unequivocal (3, 5, 12, 19).

Availability and accessibility to care are obvious vital factors. Without them there is nothing to be satisfied about. During this study period, both availability and accessibility to dental care were generally very high in Sweden. In 1992, 95 % stated that they mostly could visit the dentist they wanted (96 % in 1997). Care organization is known to influence satisfaction. Dental care given by private practitioners is often rated higher than that given by public dental care (3, 7, 11). Results from this analysis agree with these findings. One explanation pointed out for dissatisfactions with public care is the higher turnover rate among dentists. In 1992, of those having public dental care, 12 % stated that they could not visit the dentist they wanted to, while the corresponding number for private care was 1 %. If accessibility to dental care is good, utilizations habits can say something about satisfaction. Regular visitors to dental care are known to be more satisfied, not surprisingly since one reason for not being a regular visitor can be that you actually are dissatisfied with care. In this cohort, frequent visitors to dental care were more satisfied (results presented in the Part I-paper), which is in accordance with other results (3, 8).

Cost for care can be seen as a question of accessibility. No money - no care, or at least it can be an obstacle. High cost for care increased dissatisfaction

Table 1. Regression models of satisfaction with dental care 1992 and 1997.
Dependent variable. Satisfaction with dental care (range 3-12), high value = more dissatisfied

Independent variables	1992		1999		+ = increased dissatisfaction − = decreased dissatisfaction b-change 1992-1997
	b	*P*	*b*	*P*	
Dental care Factors					
Public care organisation	0.555	0.000	0.294	0.000	-
No visit to dental specialist	-0.097	0.022	0.017	0.671	+
No visit to a dental hygienist	-0.001	0.990	0.005	0.894	
High cost for care range 1-4	0.060	0.017	0.134	0.000	+
Recent care experiences					
Long travel to dental care: range 1-3	-0.012	0.467	0.013	0.411	
Long time spent in waiting-room: range 1-3	0.151	0.000	0.086	0.001	-
Information given about cost	-0.009	0.792	-0.059	0.089	
Long time since most recent visit: range 1-4	-0.120	0.056	0.025	0.685	
Not regular attenders at present dentist	0.649	0.000	0.477	0.000	-
Most recent visit experiences: range 1-3					
Bad reception	0.187	0.000	0.528	0.000	+
Great anxiety	-0.089	0.003	-0.040	0.165	-
Very unpleasant	0.065	0.090	0.026	0.494	
Unbearable pain	0.014	0.710	0.028	0.449	
Past care experiences					
No school dentistry: range 1-3	0.069	0.013	0.052	0.056	-
No frightening experience from dentistry during childhood	-0.030	0.430	-0.016	0.656	
Utilization habits- no frequent visitor: range 1-4	0.013	0.717	0.039	0.281	
Attitude- strong belives inappearance: range 2-8	-0.011	0.387	0.005	0.697	
Attitude- strong belive in function: range 2-8	-0.061	0.000	0.007	0.673	+
General health factors					
Bad self perceived general health: range 1-4	0.042	0.109	-0.002	0.920	
Smoker	-0.027	0.494	-0.136	0.002	-
Oral health factors					
Bad self perceived oral health: range 1-13	0.163	0.000	0.090	0.000	-
Not sastisfied with dental appearance: range 1-4	0.044	0.193	0.101	0.003	+
Big perceived troubles from mouth/theeth: range 17-51	0.051	0.000	0.031	0.000	-
Toothache during the last year	0.148	0.011	0.036	0.552	
Wearing dentures	0.054	0.537	0.106	0.142	
Socio-economic factors					
Gender-woman	-0.061	0.102	0.013	0.718	
Marital status-married, cohabiting	0.049	0.314	0.052	0.281	
Ethnicity-born outside Sweden	0.070	0.430	-0.030	0.749	
Place of residence, Rural (ref.cat)	-	-			
Town residence	0.067	0.217	0.050	0.356	
City residence	0.022	0.683	0.038	0.471	
Occupational status, Blue collar worker (ref.cat)	-	-	-	-	
Lower white collar	0.078	0.081	0.040	0.366	
Higher white collar	0.128	0.052	0.028	0.650	
Entrepreneurs	0.091	0.307	-0.034	0.700	
Education, Primary school (ref.cat)	-	-	-	-	
High school	0.044	0.403	-0.024	0.624	
Collage	0.034	0.603	0.064	0.298	
High dissatisfaction 1992					
range 3-12	-	-	0.302	0.000	
Adjusted R^2	0.232		0.337		
F/df 1/ df2	30.1/35/3338		39.5/36/2693		
Model significance	0.000		0.000		

b = Regression coefficient, P = Probability

Table 2. Regression model of change in satisfaction with dental care. Dependetnt variable: Change in satisfaction with dental care between 1992 and 1997. Range -8 to +8
(-8 = decreased satisfaction, +8 = increased satisfaction)

Independent variables		*b*	P
Dental care factors			
	Public care organisation	-0.117	0.007
	No visit to a dental specialist	-0.023	0.562
	No visit to a dental hygienist	-0.035	0.382
	High cost for care: range 1-4	-0.039	0.102
Recent dental care experiences			
	Long travel time to dental care: range 1-3	-0.007	0.636
	Long time spent in waiting-room: range 1-3	-0.083	0.001
	Information given about cost	0.043	0.210
	Long time since most recent visit: range 1-4	-0.023	0.704
	Not regular attenders at present dentist	-0.076	0.372
	Most recent visit experiences: range 1-3		
	Bad reception	-0.127	0.000
	Great anxiety	0.072	0.011
	Very unpleasant	-0.022	0.554
	Unbearable pain	-0.028	0.442
Past dental care experiences			
	No school dentistry: range 1-3	-0.056	0.032
	No frightening experience from dentistry during childhood	0.065	0.067
	Utilization habits- no frequent visitor: range 1-4	-0.006	0.865
	Attitude- strong beliefs in appearance: range 2-8	0.006	0.597
	Attitude- strong belifs in function: range 2-8	-0.002	0.871
General health factors			
	Bad self perceived general health: range 1-4	-0.033	0.185
	Smoker	0.048	0.206
Oral health factors			
	Bad self perceived oral helth: range 1-13	-0.070	0.000
	Not satisfied with dental appearance: range 1-04	-0.018	0.562
	Big perceived troubles from mouth or teeth: range 17-51	-0.020	0.001
	Tootache during the last year	-0-034	0.534
	Wearing dentures	0.103	0.217
Socio-economic factors			
	Gender-woman	0.021	0.560
	Marital status-married, cohobiting	0.002	0.959
	Ethnicity-born outside Sweden	0.060	0.475
	Place of residence (ref.cat)		
	Town residence	-0.005	0.918
	City residence	0.014	0.775
	Occupational status, Blue collar worker (ref.cat)	-	-
	Lower white collar	-0.063	0.134
	Higer white collar	-0.053	0.392
	Entreprenuers	0.132	0.118
	Education, Primary school (ref.cat)	-	-
	High school	-0.003	0.945
	College	-0.087	0.157
High dissatisfaction 1992	range 3-13	0.665	0.000
	Adjusted R^2	0.344	
	F/df 1/ df2	49.7/36/3302	
	Model signicance	0.000	

in this population. An increase in this relation could also be seen between the two study years. During this period there were cutdowns in Swedish welfare systems, leading to higher cost for dental care. As many as 42 % had an increased cost for dental care between the two study years. Prices for dental services were fixed during this time, set by the government, while the subsidies were cut down. Cost for dental care should be the same, either the care provider was private or public. In another study on this population, it was shown that patients having a private care provider paid considerable more money for their dental care (17). Despite this, patients having a private care provider were more satisfied with dental care than those having public dental care.

In a previous study on this cohort it was shown that the selfperceived oral health was negatively affected by a bad general health (16). There is no similar straight correlation between satisfaction and general health. Only a weak association for the 1992-study could be established. Smoking is well known to affect general health as well as oral health. One result that is quite difficult to explain is why smokers are more satisfied with dental care than non smokers, although only significant for 1997.

It is interesting to study changes with satisfaction with dental care over time, especially in this cohort, since there were increased patient costs for dental care during this period. Set as an independent variable in the regression analysis, high cost for care increased dissatisfaction with stronger association in 1997 than in 1992. When "change in satisfaction" was set as the dependent variable, cost for care affected change and gave decreased satisfaction, although only at a 10 % significance level. To study changes during five years is a rather short time. This cohort is continually followed up, making it possible to observe changes over a longer period.

There are of course strengths and weaknesses in this study. Methodological problems and weaknesses are discussed in the "part I-paper". There was, due to the large models, a rather high internal non-response due to listwise deletion of missing data. However, this may rather lead to underestimation of the results, since those less satisfied were somewhat overrepresented among non-respondents. Lacking more detailed data on internal non-respondents, this cannot be pursued further, but supports caution in interpreting point estimates. However, in the models there are primarily gradients and there is no reason to suspect that they would be much different among non-responders. Another weakness is the lack of a generally accepted theoretical model about patient satisfaction with dental care. A strength of this study is the longitudinal design as well as the large population and the stability in results between the study years, indicating a high reliability.

In conclusion, this study has examined factors influencing patient satisfaction with dental care, and to what extent. Oral health related factors, dental care factors like cost for care, care organization and attending habits, were related to satisfaction with dental care. So were experiences from the most recent dental visit and to some extent past care experiences like school dentistry. Almost no correlation was seen between socio-economic factors and satisfaction. Change between the two study years was affected by perceived oral health, experiences from the most recent dental visit and care organization and satisfaction level in 1992. The suggested model worked well and was generally confirmed empirically.

There is clearly a need for more studies, giving a possibility to develop explanatory conceptual models about patient satisfaction with dental care.

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Dimensions of good work for employees in oral and maxillofacial surgery in Sweden

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Abstract

◎ The aims of this study were to describe how the employees of Oral and Maxillofacial Surgery (OMFS) clinics in Sweden perceive "good work", i.e. their image of the good dimensions that the profession should contain and to investigate if there is a discrepancy between ideal and reality for this group.

The study was based on a questionnaire with 67 questions, related to quality management at the clinic, health and the content of good work in two sections, one with the headline "defines good work" and the other "fulfilled 'in my present work' ". Each section was subdivided into 12 parts covering aspects of good work.

The maxillo-facial surgeons rated "intellectually stimulating work" as most important (91 %), and the "hazard-free work environment" as least important (48 %). The nurses rated "stimulating fellowship" as most important (84 %), and the "opportunity for career advancement" as least important (27 %).

The percentage unit differences between the ideal and the reality were largest for the item "the work provides opportunities to have an influence on important decisions". Maxillo-facial surgeons had the greatest differences for that question and nurses had the greatest differences in "the work is well paid".

A principal components analysis was performed and three factors explained more than half of the variance (52 %). The factors were interpreted as (1) aiming at moral values and possibilities for skill discretion, as (2) career development, and as (3) work environment.

The employees of OMFS clinics in Sweden emphasized free, influential, and intellectually stimulating work, but the discrepancy between ideal and reality was rather wide. Three factors of work environment could be established.

Key words

Physical and social work environment, good work.

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Det goda arbetet inom käkkirurgin i Sverige

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Sammanfattning

Målsättningen med studien var att studera hur medarbetarna på käkkirurgiska (OMFS) kliniker i Sverige upplever ”det goda arbetet”, hur de anser att ”det goda arbetet” skall vara och hur det är och hur stort gapet är mellan dessa.

Frågeformuläret innehöll 67 frågor och berörde kvalitetsarbetet på kliniken och tillfredsställelsen av det goda arbetet. Frågorna om ”det goda arbetet” var i två delar: vad som kännetecknar gott arbete och hur det uppfylls i det egna arbetet. Varje del var uppdelad på 12 frågor med olika aspekter på ett gott arbete.

Svaren från medarbetarna på OMFS kliniker i Sverige visade att ”utvecklande arbetsgemenskap” sattes främst (78 %) och ”möjlighet för yrkeskarriär” (40 %) sattes sist. Käkkirurgerna satte ”intellektuellt stimulerande” främst och ”riskfri arbetsmiljö” sist medan tandsköterskorna satte ”utvecklande arbetsgemenskap” främst och ”möjlighet till yrkeskarriär” sist.

Skillnaden mellan svarsalternativen ”mycket viktigt” (ideal) (A) när det gällde ”kännetecknar ett gott arbete” och ”i hög grad” (verklighet) (B) när det gäller ”uppfylls i mitt arbete” gav en differens (A-B). Den största differensen mellan ideal och verklighet hade påståendet ”kunna påverka viktiga beslut”. Käkkirurgerna och tandsköterskorna svarade olika här. Käkkirurgerna hade störst differens i den frågan och tandsköterskorna hade störst differens när det gällde ”välavlönat arbete”.

En faktoranalys gemomfördes med tre faktorer (F1, F2 och F3) som förklarade mer än hälften av skillnaden (52 %). F1 definierade moralfaktorer, F2 karriärmöjligheter och F3 arbetsmiljöfaktorer.

Resultatet överensstämde med *Hjalmers et al.* (10) undersökning bland obefordrade kvinnliga distriktstandläkare.

Medarbetarna på käkkirurgiska kliniker i Sverige betonade ett fritt, inflytelserikt och intellektuellt stimulerande arbete, men skillnaden mellan ideal och verklighet var ganska stor. Tre arbetsmiljöfaktorer konstaterades, moralfaktorer, karriärmöjligheter och arbetsmiljöfaktorer.

Introduction

It is important for most employees to have a good work. The concept of "good work" has been established in the public image and accepted as a guide to desirable changes in working life [1]. The concept is difficult to define unequivocally [10], but emanates from practically oriented organisation psychology and refers to the external situation as well as to the necessity of adjusting to human needs. Good work incorporates physical and psychological well-being. It tends to be defined negatively as work that does not lead to ill health [19], but good work can also be conceived in, for example, terms of quality, quality management and work environment. The quality development usually includes both physical and social work environment as well as general environment. Satisfied patients and customers (quality), happy co-workers (social environment) and resource economy are intended to be the results of quality development. There is also a relationship between several work environment related factors and quality [2].

Good work is a question of a good work environment. The Swedish Work Environment Authority (Arbetsmiljöverket) [16] is of the opinion that there are many different factors at work affecting the employee physically and mentally. Together, these factors make up the employee's total work environment. They include, for example, noise, air quality, chemical hazards and machinery, as well as organizational conditions such as work load, working hours, leadership, social contacts, variation and the possibility of "rest and recovery". A good work environment contributes to good health and means more than the absence of illness and accidents. A good work environment is also characterized by the possibility of influence, freedom of action and development, variety, cooperation and social contacts.

Participation is one of the main factors affecting quality. How much does the employee participate in the process of work, in the work situation and in the improvement of work? Important pre-requisites for participation are communication, delegation and education. To be able to perform good work, the employees must feel engagement, responsibility and pride in their profession. There are systems addressing such issues, establishing policy and objectives. Management of an organization can include different systems, such as a quality management system (ISO 9000 [14]) or an environmental management system (ISO 14001 [11]). In implementing such systems, the character of the organization should be considered.

Dentistry is a form of a human service organization (HSO), which among other things has a clear moral foundation. The people working there actively shape and enact moral rules [8]. However, often there is a difference between the ideal and the reality of good work. *Aronsson et al.* [1] measured discrepancies between ideal and reality of good work among publicly and privately employed academics in Sweden. Among the investigated groups dentists were in both the public sector—the Public Dental Health Service (PDHS)—and the private sector. There were large discrepancies between these two groups of dentists, indicating that important occupational conditions were not met in work among dentists in the PDHS. Additionally, according to *Aronsson*, women were more likely than men to state that different aspects of good work were important to them [1].

Several reports have shown that dentists [1, 3, 6], and especially the female unpromoted general dental practitioners in the PDHS [9, 10], have a difficult work situation. It seems that the discrepancy between ideal and reality is especially wide for dentists. *Hjalmers et al.* [10] showed that dentists in the PDHS emphasized a free, influential, and intellectually stimulating work, and that the discrepancy between ideal and reality was wide, especially concerning the dentist's influence on important decisions. Emphasis on moral values covaried with desire for good skill discretion. The ideal job was set to be intellectually stimulating, providing opportunities for influencing important decisions, developing, free, and independent, and also compatible with important personal values. All these central values concerned the mental well-being [10].

We have done a study of all employees, maxillofacial surgeons, dental nurses, assistant nurses, dental hygienists, secretaries and dental technicians, of Oral and Maxillofacial Surgery clinics in Sweden and their views on the ideal core of good work. Oral and Maxillofacial Surgery (OMFS) is a dental speciality; the surgical treatment of pathological lesions and malformations of the jaws and surrounding tissues. It comprises minor procedures such as dentoalveolar surgery, and major procedures such as orthognatic surgery, temporo-mandibular joint surgery, traumatology and reconstructive surgery [15].

The aims of this study were: (i) to describe how the employees of OMFS clinics in Sweden perceive "good work", i.e. their image of the dimensions that the profession should contain to be really good work, (ii) to investigate whether there is a discrepancy between ideal and reality for this group, (iii) to analyze

the dimensionality of the conceptions of good work and (iiii) to compare with female unpromoted general practice dentists and other dental groups.

Material and methods

Study base

The material has previously been described by *Pilgård et al.* [13]. A letter explaining the study was sent (January 2002) to all 34 heads of the hospital based OMFS clinics in Sweden (including one prosthetic clinic). If the head of the clinics agreed that the clinic would participate, they were asked to acknowledge their participation by returning a list of names of their staff. Then a questionnaire was distributed to each individual staff member during April 2003. All employees at the clinics were involved. After completion of the questionnaire, the employees returned their response directly to the Department of Oral Public Health, Malmö University. The study was approved by the Research Ethics Committees (March 2003). The study design is reported in detail elsewhere [13].

Of the 34 clinics, four clinics never responded and another five declined participation. Three additional clinics declined participation when the questionnaires were sent out. Altogether 22 clinics (65 %) participated in the study. Questionnaires were distributed to 453 persons at the 25 clinics. 40 persons had either left the clinic or had other duties and 66 worked at clinics that later declined participation. Of the remaining 347 persons at 22 clinics, the net sample, 50 did not return the questionnaires and thus 297 persons responded, i.e. 86 % [13].

Questionnaire

The questionnaire consisted of 67 questions. They concerned quality management at the clinic, health, work, working climate, working situation, profession, questions about the content of good work, the connection between physical environment and health, emphasis on physical environment, health and support.

The section concerning "good work" was introduced as follows: "Here are some questions about how you view your work, your working role and how you experience 'good work' ". The question about good work was taken from a study by *Aronsson et al.* [1] (also used in *Hjalmers et al.* [10]) and reads as follows: "What defines 'good work' for you and to what degree is this fulfilled in your present work?" The question was in two sections, one with the headline "defines good work" and the other "fulfilled 'in my present work' ". Each section was subdivided into 12 parts covering different aspects of good work. The response alternatives for the "defines good work" section were: "less important", "rather important", and "very important". For the section "fulfilled in my present work", the response alternatives were: "to a low extent", "to a certain extent", and "to a high extent".

The items of each parts can be seen in Tables 1-4.

Statistical methods

The data were first presented in frequency tables where percentage unit differences were calculated. Principal components analysis (PCA) was then used on the raw scores of the ideal questions using the Kaiser criterion and inspection of screen plots for determination of the number of factors. The factor solution was varimax rotated [12]. All data were processed in the statistics programme SPSS 11.0.

Results

The responses for all employees of OMFS clinics in Sweden are shown in Table 1, i.e. how they perceive "good work". The responses mirror their opinions what the profession should be if it was to be a good work for them. The responses from surgeons are stated in Table 2, and for dental nurses and assistant nurses (nurses) in Table 3. The employees rated "stimulating fellowship" as most important (78 %), and the "opportunity for career advancement" as least important (40 %). The surgeons rated "intellectually stimulating" as most important (91 %), and the "hazard-free work environment" as least important (48 %). The nurses rated "stimulating fellowship" as most important (84 %), and the "opportunity for career advancement" as least important (27 %). No responses from dental hygienists, secretaries or dental technicians have been presented, because these groups were too small, dental hygienists (1 %), secretaries (11 %) or dental technicians (2 %), only 14 % together. A non-response analysis showed no significant difference between respondents and non-respondents [13].

A principal components analysis was performed on the raw scores and is presented in Table 4, with comparison values to *Hjalmers et al.* [10]. The item "the work is of benefit to others/society" was excluded because its communality was too low (0,18). Three factors (F1, F2 and F3) explained more than half of the variance (52 %). In loading plots they formed three well-defined vector clusters. The factors are arranged in order in Table 4.

Table 1. Frequencies in percent for all employees in Oral and Maxillofacial Surgery ($271 \leq n \leq 287$) for the question: 'What defines "good work" for you and to what degree is this fulfilled in your present work?'

Defines good work				Fullfilled in my present work		
Less important	Rather important	Very important (A)		To a low extent	To a certain extent	To a high extent (B)
1	30	68	The work is of benefit to others/society	5	38	58
2	31	66	Personal qualities can be utilized constructively	12	66	22
0	23	77	Innovative thinking and initiative-taking are appreciated	17	56	27
0	28	72	The work provides opportunities to have an influence on important decisions	32	54	14
2	32	67	Free and independent	17	53	31
4	30	66	The work is compatible with important personal values	7	58	35
12	48	40	Opportunity for career advancement	44	42	14
0	24	76	Intellectually stimulating	7	57	36
3	36	61	The work provides opportunities to specialize in areas of special interest for me	21	53	26
5	27	69	Hazard-free work enviroment	7	62	31
2	36	62	The work is well-paid	61	32	7
2	20	78	Stimulating fellowship	9	58	34

Table 2. Frequencies in percent for *maxillo-facial surgeons* in Oral and Maxillofacial Surgery ($89 \leq n \leq 92$) for the question: 'What defines "good work" for you and to what degree is this fulfilled in your present work?'

Defines good work				Fullfilled in my present work		
Less important	Rather important	Very important (A)		To a low extent	To a certain extent	To a high extent (B)
1	28	71	The work is of benefit to others/society	6	24	71
3	24	73	Personal qualities can be utilized constructively	11	54	35
0	22	78	Innovative thinking and initiative-taking are appreciated	20	51	29
0	18	82	The work provides opportunities to have an influence on important decisions	28	47	25
1	30	70	Free and independent	10	53	37
5	24	72	The work is compatible with important personal values	6	48	46
1	30	70	Opportunity for career advancement	11	54	35
0	9	91	Intellectually stimulating	3	32	65
0	21	79	The work provides opportunities to specialize in areas of special interest for me	9	37	54
10	42	48	Hazard-free work enviroment	7	62	32
2	40	58	The work is well-paid	32	52	16
1	32	67	Stimulating fellowship	9	55	36

In the interpretation of the factors, the items for Fl were regarded as aiming at moral values and possibilities for skill discretion. Five questions were included, moral, freedom and possibilities for personal influence and development.

F2 was defined as a factor for career development. This factor included three questions. The variables contained aspects of intellectually stimulating work, of possibilities of specialization and of career.

F3 was defined as a factor for work environment. This factor also included three questions. Here the variables contained aspects of fellowship, well-paid job, and a hazard-free work environment. It is noteworthy, however, that the item "stimulating fellowship" had a substantial minor loading on the first factor.

The percentage unit differences between the response alternatives marked A in the Tables 1-3, i.e. "defines good work as very important" (the ideal), and the one marked B, i.e. "fulfilled in my present work to a high extent" (the reality), are given in column A-B in Table 5. The highest ranking ideals — "stimulating fellowship" (influence, use of personal qualities, freedom and independence) — did not

Table 3. Frequencies in percent for *dental nurses and assistant nursers* in Oral and Maxillofacial Surgery ($146 \leq n \leq 156$) for the question: 'What defines "good work" for you and to what degree is this fulfilled in your present work?'

Defines good work				Fullfilled in my present work		
Less important	Rather important	Very important (A)		To a low extent	To a certain extent	To a high extent (B)
1	31	67	The work is of benefit to others/society	5	45	51
1	36	62	Personal qualities can be utilized constructively	12	75	13
0	21	79	Innovative thinking and initiative-taking are appreciated	16	60	25
1	32	67	The work provides opportunities to have an influence on important decisions	33	59	8
3	36	61	Free and independent	22	56	22
5	33	63	The work is compatible with important personal values	10	63	27
18	55	27	Opportunity for career advancement	57	38	5
0	28	72	Intellectually stimulating	7	69	25
3	44	53	The work provides opportunities to specialize in areas of special interest for me	24	64	12
2	21	77	Hazard-free work enviroment	7	62	31
2	31	67	The work is well-paid	78	19	3
1	15	84	Stimulating fellowship	9	60	31

Table 4. PCA of what defines good work. Factor loading >0.20. Major loadings in boldface type. In brackets unpromoted female dentists (10).

Communalities		Variables	F1		F2		F3	
0.60	(0.57)	Personal qualities can be utilized constructively	**0.77**	**(0.71)**				(0.22)
0.51	(0.49)	Innovative thinking and initiative-talking are appreciated	**0.68**	**(0.49)**		(0.36)	0.24	(0.35)
0.45	(0.57)	The work provides opportunities to have an influence on important decisions	**0.64**	**(0.73)**				
0.38	(0.48)	Free and independent	**0.59**	**(0.66)**				
0.25	(0.57)	The work is compatible with important personal values	**0.47**	**(0.55)**		(-0.26)		(0.44)
0.66	(0.63)	Opportunity for career advancement			**0.80**	**(0.79)**		
0.51	(0.41)	Intellectually stimulating		**(0.63)**	**0.68**			
0.49	(0.54)	The work provides opportunities to specialize in areas of special interest for me	0.26		**0.65**	**(0.69)**		(0.21)
0.68	(0.49)	Hazard-free work enviroment				(0.31)	**0.80**	**(0.63)**
0.70	(0.49)	The work is well-paid			0.51	**(0.70)**	**0.63**	
0.50	(0.61)	Stimulating fellowship	0.36				**0.61**	**(0.78)**
[0.18	(0.47)	The work is of bebefit to others/society		(0.44)				**(0.49)]**
		Variance explanation (%)	27.9	(27.8)	13.2	(15.5)	11.0	(9.5)
		Total 52.1% (52.8%)						

have the largest differences between ideal and reality. That occurred for the question "the work provides opportunities to have an influence on important decisions". Surgeons and nurses also responded differently here. Surgeons had the greatest differences in "the work provides opportunities to have an influence on important decisions" and nurses had the greatest differences in "the work is well- paid".

Comparing Table l with Table 4, the items constituting the first factor (F1) had a mean percentage unit difference of 44, F2 had 33 and F3 had 30 percentage unit differences.

Discussion

The aims of this study were: (i) to describe how the employees of OMFS clinics in Sweden perceive "good work", i.e. their image of the dimensions that the profession should contain if it is to be really a good work for them and (ii) to investigate whether there is a discrepancy between ideal and reality for this group, and (iii) to analyze the dimensionality of the conceptions of good work and (iiii) to compare with female unpromoted general practice dentists and other dental groups. This study analysed ideals and reality for the content of good work for the employees of OMFS clinics in Sweden.

Table 5. The percentage unit differences between the response alternative marked A in the Tables 1-3, i.e. "defines good work as very important" (the ideal), and the one marked B, I.e. Fullfilled in my present work to a high extent" (the reality).

	A-B			
	All OMFS	Surgeons	Nurses	Female dentists [10]
The work is of benefit to others/society	10	0	16	10
Personal qualities can be utilized constructively	44	38	49	72
Innovative thinking and initiative-talking are appreceiated	50	49	54	66
The work provides opportunities to have an influence on important decisions	58	57	59	82
Free and independent	36	33	39	68
The work is compatible with important personal values	31	26	36	35
Opportunity for career advancement	26	35	22	34
Intellectually stimulating	40	26	47	72
The work provides opportunities to specialize in areas of special interest for me	35	25	41	40
Hazard-free work enviroment	38	16	46	55
The work is well oaid	55	42	64	59
Stimulating fellowship	44	31	53	60

The main results in this study correspond with *Hjalmers*' [10] results. The frequencies of ideal and reality (Tables 1-3) were nearly the same in this study as those of *Hjalmers*' dentists, even when it concerned only surgeons or only nurses. The percentage unit differences A-B (Table 5), the discrepancy between ideal and reality, were rather wide among the employees of OMFS clinics, but it was wider among dentists [10].The respondents emphasized free, influential, and intellectually stimulating work,.

This paper shows that there was a difference of opinions between maxillo-facial surgeons and nurses concerning the definition of good work. The surgeons rated "intellectually stimulating work" highest and the "hazard-free work environment" lowest. The nurses rated "stimulating fellowship" highest and the "opportunity for career advancement" lowest. Unpromoted female general practice dentists rated "intellectually stimulating work" highest and the "opportunity for career advancement" lowest [10].

Aronsson et al. [1] reported that "intellectually stimulating work" was found to be of great importance in all the studied subgroups of graduate employees. Also Hjalmers et al. [10] reported similarly but the discrepancy between ideal and reality for this group was wide. OMFS is a dental speciality and the surgeons seem to regard their work as more intellectually stimulating. Indeed all employees in OMFS clinics meant that the work was intellectually stimulating.

Bergman & Klefsjö [4] contend that top management commitment can be based on a successful work with quality improvements. This shall rest in a culture, based on the following values: focus on customers, decisions based on facts, focus on processes, continuous improvement, and committed to all. In ISO 9000:2000 the employees' commitment is also discussed [14]. Their full engagement leads to the employees' ability being used in the best interest of the organization. This is relevant for leadership [14]. *Pilgård et al.* [13] showed that the respondents did not agree on which quality system they worked with. This showed that one of the most important aspects in a quality system, i.e. to inform everyone, was unsatisfactory.

In the present study, it is obvious that the maxillofacial surgeons and the nurses regarded opportunities to have an influence on important decisions as very important when they defined good work, but also that it was not fulfilled in the work. In order to provide a good model and create a feeling of participation, working with a total quality system means that all employees should be involved, that all understand the importance of the work, and that everybody is committed [5, 7 ,17, 18]. There is obviously not a fully satisfactory attainment of this criterion in Swedish OMFS clinics.

The discrepancy between ideal and reality was generally larger among unpromoted female general practice dentists than among OMFS employees. The difference also remained considering maxillo-facial surgeons and nurses. The result of *Aronsson et al.* [1] was similar to that of *Hjalmers et al.* [10]. One explanation could be that OMFS is a dental speciality, and

the work is partly different from that of the general practice dentists. The clinics are hospital based with a near cooperation with different medical specialities. Even the work of the dental nurses and the assistant nurses was more stimulating for them than for the dentists in *Hjalmers*' study [10].

This paper further shows that there was a correspondence with *Hjalmers et al.* [10] in the dimensions of the good work in Table 4. Three factors explained more than half of the variance: (1) moral values, (2) career development and (3) work environment. These are nearly the same as reported by *Aronsson et al* [1]. They also defined three groups: (1) work intellectuality, (2) the value of work, and (3) career, psychosocial and physical work environment. The stability of factor solution strengthens the interpretation that the factors capture important aspects of good work.

In conclusion, the employees of OMFS clinics in Sweden emphasize free, influential, and intellectually stimulating work, but the discrepancy between ideal and reality was rather wide. Three factors of work environment could be established.

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