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Overall job satisfaction among dentists in Sweden and Denmark: A comparative study, measuring positive aspects of work

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Abstract

Objective. Human service work differs from industrial work, which should be considered when organizing work. Previous research has shown organizational differences in the perceptions of work, often with a focus on negative aspects. The aim of this study was to analyse the overall job satisfaction among private- and public-practising dentists in Sweden and Denmark. This also implied a description of the questionnaire *Swedish and Danish Dentists' Perceptions of Good Work* about opportunities and positive and rewarding aspects of work. ***Material and methods.*** A questionnaire covering the multidimensional concept of good work was developed. A total of 1835 dentists randomly sampled from the dental associations were sent a questionnaire in November 2008. A special non-response study was performed. Principal components analysis (PCA) was used to create a measure of overall job satisfaction, comparing four organizational subgroups. ***Results.*** The average net response rate was 68% ($n = 1226$). The special non-response study of the Danish private practitioners showed more males, managers and dentists with more working hours than the respondents. PCA of three satisfaction questions showed a stable one-factor solution. There were differences in job satisfaction, with Danish public dentists ranked highest in overall job satisfaction and Swedish public dentists lowest. ***Conclusions.*** There were organizational differences in the perception of job satisfaction. Further analysis of how the human service is organized in the different groups is needed.

Key Words: *Eudaimonia, good work, human services, patient relation, rewards*

Introduction

Organization and human services

In dentistry, as well as in other kinds of human service work, the patients are what Hasenfeld [1] calls the raw material of work. As such, the patients represent complex systems with attributes which interrelate but are yet unstable and vary from person to person. Lipsky [2] describes human service workers as "street level bureaucrats" with three characteristics of their work: (1) a constant interaction with patients; (2) being independent and discrete where personal attributes and reactions of the human service worker affect their patients' treatment; and (3) having a significant impact on the lives of the patients. The core of human service work is the relation between the patient and the human service provider. The nature and quality of this relation is a critical determinant of the success or failure of a people-changing organization, where the aim is to directly alter the personal attributes of patients to improve their well-being [1].

The focus on this social interaction between the provider and the patient has been lost in research; instead, there has been an increased emphasis on industrial/organizational theoretical frameworks [3]. However, even though the specific human service characteristics differ from work in industry, environmental models developed for industrial organizations are often transferred directly to human service organizations without considering the contextual and organizational differences [4]. Examples are the two work environmental models: the Demand–Control (DC) model [5]; and the Effort–Reward Imbalance (ERI) model [6]. Even if they are industry-oriented, there are still relevant perspectives in the ideas of the positive counterbalances in the two models which are relevant when studying human services. From the DC

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model, the Activity diagonal is relevant, where the demands as well as the control over the work are simultaneously high [5]. From the ERI model, the rewarding aspects of work are also relevant. A critique of the DC model is that it should be adapted with more specific demand and control measures relevant for human services [4]. Examples of such specific job demands in human service could be high moral exertions, empathy and the necessity of hiding one's own feelings in the interaction [7]. For job control, an example could be that skill discretion can be high while decision authority can be low in the same job. In the ERI model, rewards are primarily defined as money, esteem and job security/career opportunities. Neither model addresses the potential intrinsic lasting rewards that may be specific for human services, e.g. trustful relationships, the feeling of doing good or a creative zest [8]. The potential dilemmas of the differences between industry and human services form the framework for the research project behind the present study, where the overarching aim was to find positive aspects of human service work in different organizational settings.

The way human services are organized affects not only the patients but also the human service provider. During the last couple of decades, administrative reforms and strategies in the public sector, also in the Nordic countries, have been inspired by the 'New Public Management' (NPM) idea. Hood [9] argued that a "Swedish way" that included all Scandinavian countries in the 1980s had both strong motives (fiscal stress) and opportunity (central leverage over public sector) for the development of NPM. In NPM, focus is set on outputs and results and a public sector is split into separate units with decentralized management. This has also been the case in public dentistry, where the organization of work has been affected by, for example, outsourcing and increased competition by market-oriented conditions [10].

The different ways of organizing human service in dentistry have been shown to affect the human service provider. The results of Bejerot [11], Moore [12], Hjalmers [13], Berthelsen et al. [14,15] and Harris et al. [16] point to organizational and national differences between dentists' perceptions of their work. This has primarily been revealed in health problems, stress and job dissatisfaction, but the results have also pointed to positive and satisfactory elements of work as well. As Maslach et al. [17] put it: "Although a neutral work life has clear benefits over burnout, it does not encompass the full range of potential experiences at work. Work life provides opportunities for exceptional performance, joyous experiences, and deep fulfillment." (p. 103).

In the present study, the human service provider, more particularly the dentist, was the object of research. Both the special caregiver relationship and the organizational framework of human services were taken into account. The overarching aim was to capture positive aspects of work in dentistry, what may be called *Good work*.

Positive aspects of work

Research is limited on positive aspects of work as a dentist. A pathogenic, problem-based paradigm has dominated most occupational research [18]. Within occupational health psychology, a paradigm shift from a disease model towards a genuine health model is necessary for the field to develop in a more balanced way [19]. For example, in psychology, the ratio of scientific publications on positive versus negative states has been 1:14 until the year 2000 [20].

Although statements with positive wording are included in many papers, most research has focused on health problems, stress and demands. There is though research touching on some positive aspects such as engagement and dentist's internal resources as ways of coping with high demands [21–23]. These results, as well as job satisfaction research [16], indicate that dentists have a positive working attitude and high job satisfaction.

Research on job satisfaction is the field closest to the object of the present research. According to Locke's [24] classic definition, job satisfaction refers to "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (p. 1300). Job satisfaction has empirically been measured in dentistry in more than a dozen different countries. For example, Harris et al. [16] measured job satisfaction aspects among dentists with various affiliations in the UK. The results showed different levels of job satisfaction between different affiliations.

Aim

The purpose of this paper was to create an outcome measure of overall job satisfaction, applying the measure in four organizational settings. Doing this also implies a description of the background and development of the questionnaire *Swedish and Danish Dentists' Perceptions of Good Work*.

Material and methods

Sample and questionnaire

The basis of this study comprised nationally representative samples of Swedish and Danish dentists. A proportionally stratified random sample was used within each country, based on relative organizational affiliations. The available sampling frames were the membership registers of the Dental Associations in

the two countries. Around 21% of the Danish and 12% of the Swedish dentist populations were sampled. The sample fractions differed since it was desirable to have similar sample sizes in the two countries. The inclusion criterion was set as being a practising general dentist in private or public practice in Sweden or Denmark. In all, 1837 dentists were randomly selected from the respective association registers. Two were excluded, so that 898 Swedish dentists, 449 public and 449 private, and 937 Danish dentists, 201 public and 736 private, were sent a questionnaire, marked with a code to identify non-respondents with the purpose of sending reminders. The dentists were informed that responses were confidential and that, if participating, they would be sent an overview of selected preliminary results from the study. The Swedish versions were sent and received at Malmö University and the Danish ones by the National Research Centre for the Working Environment in Denmark. One week after the first mailing of the questionnaire in October 2008, the non-respondents received a reminder and once again 2 weeks later, at which point a new copy of the questionnaire and a stamped return envelope were included. Data were registered into the SPSS statistical program.

No non-response analysis of the whole sample could be done, given a lack of appropriate data in the sampling frame. A special non-response analysis was carried out on 30 randomly selected Danish private practitioners by telephone interview in June 2009. The interview consisted of eight core questions taken from the questionnaire.

A brief description of the context of dentistry in Sweden and Denmark can be found in the Appendix.

Construction of the questionnaire

The development of the questionnaire was inspired by the recommendations of Wolfe and Smith [25] to create variables based on theoretical constructs from literature reviews with empirical, theoretical or model-based focus. The questionnaire was also based on the results from a study by Hjalmers [26] and on a qualitative study by Berthelsen et al. [8]. The final questionnaire contained 39 question batteries. Some were tested in an on-line pilot study (defgo.net by InterResearch A/S) on 66 Danish and 74 Swedish practising dentists in spring 2008, where the dentists were also asked to answer and comment on the degree of intelligibility and readability of the questions. About a quarter of the questions in the pilot were retained after a critical revision. Translation was primarily done by the research group, which contained dentists and researchers from both countries. Content was adjusted by reviews of dentistry and work environmental research to ensure linguistic and content accuracy, and that the questions could be applied to all dentists within the sampling frame. Before finalizing the questionnaire, 20 dentists were asked to discuss understanding, wording and overall impression. An English translation for descriptive purposes was done in cooperation with a native English dentist and researcher. A rhetorician verified the questionnaire for spelling and grammar. A graphics designer produced the layout.

The multidimensional concept of good work in the questionnaire was covered by nine general constructs: rewarding aspects of work, job satisfaction, relations with patients, relations with colleagues and management, work values, overall health, work–life balance, organizational characteristics and personal characteristics.

General characteristics

To describe some general characteristics of the respondents, the questions and responses shown in Table I were used.

Special non-response study

For the special non-response study, four questions and four demographic questions were asked to show tendencies in the perceptions of work in general. The questions are shown in Table II.

Overall job satisfaction

An additive index consisting of three questions was created after a dimensional analysis. The questions are shown in Table III.

The questions were created by the research group to measure the degree of fulfilment that work can provide, satisfaction with general conditions at work and satisfaction with work life in general. The questions were meant to cover a perceived fulfilment of expectations of working life in the past and in the future as well as the present emotional state of mind.

The Danish and Swedish word *Arbejdsglæde*/*Arbetsglädje* was a translational challenge of this study. The term has no direct translation into English but is comparable to ‘eudaimonic work’. In this study it was translated into ‘work fulfilment’. For the specific perspective of ‘Overall job satisfaction’ being a lasting intrinsic and ‘positive state of mind’, two classical ideas can be applied from happiness and well-being research: eudaimonia and hedonia. Eudaimonia has mostly been used in well-being research and can be defined as producing happiness and well-being for the worker. This, by striving to actualize their potential, doing work of meaning and seaking a purpose in their lives, in line with their values, emanating from internal

Table I. Questions and statements used to describe some general characteristics of the respondents.

Question	Response					
Your gender?	Male ☐ Female ☐					
I am:	☐ Member of Praktikertjänst (The producer cooperative; only in Sweden)					
	☐ Practice owner in private practice					
	☐ Employed in private practice					
	☐ Manager in public dentistry					
	☐ Employed in public dentistry without management responsibility					
	☐ Something else					
You are:	☐ Born in Sweden/Denmark					
	☐ Born in another Nordic country					
	☐ Born in a country outside Scandinavia					
Your family situation:	Single ☐ Married/Cohabiting ☐ Something else ☐					
Which year did you complete your dental education? Year_____						
How many persons work in your daily workplace (including yourself)?						
Number of dentists	_____					
Number of dental hygienists	_____					
Number of dental nurses	_____					
How many hours per week do you work as a dentist?	Total ____ hours					
To what degree do you experience the following in your work?:	To a very low degree	To a low degree	To some degree	To a high degree	To a very high degree	
- Work fulfilment	☐	☐	☐	☐	☐	
- Satisfaction with your work as a whole?	☐	☐	☐	☐	☐	
Do you feel that you have a good working life?	Not at all	To a low degree	To some degree	To a high degree	To a very high degree	
	☐	☐	☐	☐	☐	

and external sources [27,28]. However, the concepts can be viewed as overlapping. The hedonic view can be regarded as well-being achieved through the pursuit of pleasure, enjoyment and comfort, while the eudaimonic view is more concerned with acting to the best of one's ability, developing one's potential and doing good. When experiencing a eudaimonic life, a state of hedonia often follows [29].

Statistical methods

The material was analyzed using SPSS 16.0 for Windows (SPSS Inc, Chicago, IL). The response rate was calculated according to the recommendations of Locker [30] as the "number of completed cases as a proportion of the number of eligible cases in the sample" (p. 73). The general characteristics of the respondents were analysed with the Kruskal–Wallis non-parametric test (asymptotic significance) between four groups: Danish public/private practitioners and Swedish public/private practitioners. When analysing these categories separately, no weighting procedure due to the different sample fractions was necessary. In the special non-response study for the Danish private practitioners, a non-parametric Mann–Whitney U-test (asymptotic significance, two-tailed) was used. Principal components analysis (PCA) was performed on the three *Overall job satisfaction* variables and tested for stability on gender and on the four subgroups: Swedish public/private practitioners and Danish public/private practitioners. An unrotated initial factor solution, with pairwise exclusion of missing values, was used. The Kaiser–Meyer–Olkin measure of sampling adequacy, scree plots, communalities and factor loadings were used for the determination of the number of factors. The overall job satisfaction index was analysed using the Kruskal–Wallis test on the four subgroups. $P \leq 0.05$ was set as the significance level.

Results

Response

Of the 1835 questionnaires sent out, 1292 were returned. Of the respondents, 31 were excluded as

Table II. Questions used in the non-response study.

Question	Response				
Your gender?	Male ☐ Female ☐				
I am:	☐ Practice owner in private practice ☐ Employed in private practice				
Which year did you complete your dental education? Year_____					
How many hours per week do you work as a dentist? Total ____ hours					
To what degree do you experience the following in your work:	To a very low degree	To a low degree	To some degree	To a high degree	To a very high degree
- Work fulfilment?	☐	☐	☐	☐	☐
- Satisfaction with your work as a whole?	☐	☐	☐	☐	☐
How do you assess the extent of your workload?	Much too small	Too small	Appropriate	Too great	Much too great
	☐	☐	☐	☐	☐
In general, would you say your health is:	Poor	Acceptable	Good	Very good	Excellent
	☐	☐	☐	☐	☐

not belonging to the sampling frame (not general practising dentists). The issued number of questionnaires was thus corrected to 1804. The net response rate was 68% (n = 1226). Of the 449 Swedish public practitioners who received a questionnaire, 75% participated (n = 325), while for the private practitioners 68% of 449 (n = 302) participated. For the Danish population, 201 public practitioners were sent a questionnaire and 81% participated (n = 160), while 736 private practitioners received a questionnaire and 60% participated (n = 439).

Special non-response study of the Danish private practitioners

Because of the low response rate in this group, a special non-response analysis was performed. There were significantly more men in the sample and also more dentists with managerial responsibility and dentists with longer working hours among the group of non-respondents. No statistically significant differences were found with regard to time since graduation, workload or if they were satisfied and felt fulfilled in their work. A statistically significant difference was found with regard to perceived general health, where the non-respondents rated their health as better than that of the respondents (Table IV).

General characteristics of the respondents

The Swedish private practitioners had a much lower proportion of female respondents, with only 33% compared to the other three subgroups: of the Danish private practitioners 65% were women, and for the public-practising dentists there were 71% women in Sweden and 87% in Denmark. In both private and public dentistry in Sweden, 89% and 86%, respectively were born in Sweden, compared to 96% and 94%, respectively in private and public dentistry born in Denmark. Most private-practising dentists were married or cohabiting (91% in Sweden and 88% in Denmark), which was the case for 86% of the Swedish and 85% of the Danish public-practising dentists. As many as 91% of the private-practising dentists had

Table III. Questions used to create the additive index.

Question	Response				
To what degree do you experience the following in your work?:	To a very low degree	To a low degree	To some degree	To a high degree	To a very high degree
- Work fulfilment	☐	☐	☐	☐	☐
- Satisfaction with your work as a whole?	☐	☐	☐	☐	☐
Do you feel that you have a good working life?	Not at all	To a low degree	To some degree	To a high degree	To a very high degree
	☐	☐	☐	☐	☐

Table IV. Special non-response analysis for Danish private practitioners.

	Sample respondents				Non-respondents (n = 30)			
	%	Mean	SD	n	%	Mean	SD	P for difference
Gender (male/female)	35/65	–	–	413	67/23	–	–	0.02
Managers	76	–	–	413	87	–	–	0.001
Year since graduation		20	4.8	412		20	3	0.092
Working hours per week		36	7.6	405		40	11	<0.001
Self-perceived health		3.7	0.9	413		4.2	0.6	<0.001
Workload		3.4	0.6	411		3.6	0.6	0.131
Degree of work fulfilment		4	0.7	409		4.1	0.6	0.085
Degree of satisfaction with work as a whole		3.9	0.7	407		4.1	0.7	0.106

managerial responsibility in Sweden, but only 15% of the public ones. In Denmark, 76% of the private- and 62% of the public-practising dentists had managerial responsibility. All questions in Table V showed significant differences between the subgroups ($P \leq 0.001$).

Overall job satisfaction

The items were negatively skewed for all four groups (skewness –1.0 to –0.3). The average share of internal non-response was 1%.

PCA showed a one-factor solution. Results were stable with regard to gender and the four subgroups: Swedish public/private and Danish public/private. An additive index (range 3–15) was constructed as *Overall job satisfaction*. The distribution was normal but slightly negatively skewed (–0.65). For the whole sample as well as for the subgroups, both median and mode were 12. The four subgroups Danish public/private practitioners and Swedish public/private practitioners showed some differences in the overall job satisfaction means. Using the Kruskall–Wallis test on the index between the four groups ($P \leq 0.001$) indicated that they did not have equal means (Table VI).

Discussion

The results showed organizational differences in the perception of overall job satisfaction. The Swedish public dentists were the least satisfied, and the Danish public dentists were the most satisfied. There were differences between the subgroups in all general characteristics analysed. Especially great differences were found among women respondents. In the special non-response study, greater proportions of dentists who were males, had managerial responsibility, worked longer hours and had better perceived general health were found among the non-respondents. An average response rate of 68% was achieved for the whole study.

Table V. General characteristics of the general practising dentists grouped by nationality and affiliation[a].

	National and organizational affiliation											
	Swedish private			Swedish public			Danish private			Danish public		
	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD	n
Years since graduation	26	10	300	21	12	297	20	5	412	26	9	159
Average practice size:												
No. of dentists	2.2	1.5	197	6	3.2	292	2.8	1.5	401	3	2.3	155
No. of dental hygienists	1	1	301	3	2	291	0.8	1	411	1.3	1.7	156
No. of dental nurses	3	3	301	10	5.4	291	4.3	2.3	411	5.7	4.4	156
Average working hours	38	8.4	297	35	8	296	36	7.6	405	32	6.4	158
Satisfaction with work	3.9	0.9	295	3.6	0.8	292	3.9	0.7	407	3.9	0.7	158
Work fulfilment	3.9	0.9	297	3.7	0.8	292	4	0.7	409	4	0.7	158
A good working life	4	0.8	301	3.7	0.8	294	4	0.8	413	4	0.7	159

[a]Statistically significant differences in mean rank between subgroups for all variables ($P \leq 0.001$).

Table VI. Factor analysis on items concerning overall job satisfaction for dentists in Sweden and Denmark.

PCA	No. of factors	KMO	Communalities	Variance explained (%)	Factor loadings	α
Whole sample	1	0.708	0.695–0.826	78	0.834–0.909	0.86
Swedish private	1	0.671	0.617–0.839	76	0.785–0.916	0.84
Swedish public	1	0.715	0.717–0.835	79	0.847–0.914	0.87
Danish private	1	0.714	0.703–0.805	76	0.839–0.897	0.84
Danish public	1	0.733	0.769–0.853	82	0.877–0.924	0.89
Men	1	0.722	0.738–0.844	80	0.859–0.919	0.87
Women	1	0.693	0.662–0.826	76	0.814–0.909	0.84

Overall job satisfaction index (range 3–15)	Mean	SD	*n*	*P* between all subgroups
Swedish private	11.8	2.2	294	
Swedish public	11.0	2.1	287	
Danish private	11.8	1.9	405	
Danish public	11.9	1.9	157	
All subgroups	11.6	2.1	1197	≤0.001

KMO = Kaiser–Meyer–Olkin.

In a recently published review of response rates for healthcare professionals, including dentists, average response rates of 35–68% were found [31]. The average response rate in this study may therefore be considered acceptable. While previous research on dentists in Sweden and Denmark has shown higher response rates [15,26], a third reminder was considered for the Danish private-practising dentists. Instead, a special non-response study was decided on. Interviews revealed that the non-respondents simply felt they had a lack of sufficient time to respond to questionnaires in general. They also worked longer hours than the respondents, which did not seem to affect their job satisfaction in a negative way. The Danish private practitioners also had greater proportions of males and managers, the latter often having increased responsibility and working longer hours. This could be the simplest explanation for the higher proportion of non-respondents in this group.

The proportions of public and private practitioners in each country were reflected by the sample construction. Except for the Swedish private practitioners, the proportion of female respondents was more than two-thirds. Several studies within dentistry have shown a higher percentage of female respondents [32–34]. The national share of female dentists in Denmark was ≈55% in 2008 [35]. Therefore, there was an overrepresentation of women among the Danish public and private practitioners in the sample. This does not seem to be the case for the Swedish public and private practitioners, as the average share of women in the two subgroups was close to the 49% found among Swedish dentists in 2005 [35]. The female dentists in the sample worked on average four hours less per week than the male ones. The gender differences among respondents might be a confounder for working hours, giving the female dentists more time to respond. The overrepresentation of female respondents in the sample might affect job satisfaction through organizational factors such as opportunities for practising feminist values in human service work, as for example in emotional and care work [7].

The Danish public practitioners comprised many more dentists with managerial responsibility than the Swedish public ones. Also, the Danish public clinics had almost half as many employees as the Swedish public clinics. This could be a reflection of a significant difference in how the ideas behind NPM are implemented in the public sector in the two countries, which in Denmark involves smaller units and decentralized management.

Good work and job satisfaction as terms

As a scientific expression, Good work is mostly used to describe a form of best practice in a certain job, unifying professional expertise and social responsibility. A dual sense of the adjective 'good' is often used: (1) high-quality work objectively judged by people knowledgeable about the domain; and (2) work that goes beyond the worker and benefits a wider good [36]. Good work and a good job can also differ, by stating that a good job does not always provide the possibility of doing good work [37]. Gardner [38] acknowledges the individual requirements and states: "It is always a challenge, requiring ethical commitment and skill on the part of each individual worker." (p. 6).

It is hard to imagine what any 'objective' measure of good work would imply. Good work is an individual

matter which can only be grasped by asking the persons in question. The good work perspective involves a feeling of fulfilment, well-being or happiness, i.e. work with hedonic and eudaimonic properties. Job satisfaction can be regarded as similar to good work, although maybe lacking a specific state of mind. One can be satisfied with the conditions of work, such as the surroundings, relations, salary or tasks, without having a feeling of well-being, fulfilment or a state of happiness. Questions with factors which can be regarded as an intrinsic feeling closely related to fulfilment can also be found in The Dentists' Satisfaction Survey [16].

As an outcome of experiencing good work, three items concerning overall job satisfaction were analysed. The obtained single factor can be interpreted to describe overall satisfactory and eudaemonic perceptions of work, also covering satisfaction with and expectations of the conditions at work over time. On the basis of the content of the questions and on the fact that the factor was statistically one-dimensional and stable, there were grounds to create an index of overall job satisfaction (Table VI).

Organizational differences in overall job satisfaction

When analysing the index of overall job satisfaction for organizational differences, there were clear indications of such. The Swedish sample in particular showed differences between the two organizational affiliations. Similar results concerning differences in job satisfaction between public and private practitioners were found in a UK study, where the private practitioners were also the most satisfied [16]. Within public dentistry, the Danish dentists in the sample were the most satisfied, and the publicly organized dentists in Sweden were found to be the least satisfied. Corresponding to previous results about public dentists in Sweden, this subgroup appears to face work-environment challenges.

The way that public dentistry is organized differs in the two countries. The Swedish public dentists treat a similar patient group as private dentists, whereas the majority of Danish public dentists are limited to treating children and the elderly and disabled. The NPM idea also has a much longer tradition in Sweden and is implemented differently compared to the situation in Denmark. Management and productivity are focal points in Swedish public dentistry, where clinics are transformed into profit centres on budgetary grounds and have specific financial goals. For some dentists, this may conflict with their moral values and ideals of providing good care for the public [8,10,11,13]. This may lead to the implication that a good job can have different possibilities for doing good work in public dentistry in the two countries.

The perception of high job satisfaction is not only an individual matter for the dentists but also a positive external outcome for patients and organizations. Studies have shown that positive experiences of work, as for example work engagement, are predictive of job performance and client satisfaction [39,40]. Engaged workers with high job demands are found to be more creative, more productive and more willing to go "the extra mile" [40].

Conclusions

This study has indicated organizational differences in the overall job satisfaction among publicly and privately organized dentists in Sweden and Denmark. The results confirm previous results within dentistry. Further research will be of interest to grasp the specific differences in the organization of work as well as individual factors which seem to have a positive influence on the perception of work.

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Appendix. Danish and Swedish organizational contexts of dentistry

The Nordic countries are often regarded as a single entity because they share a common cultural basis, even though dentistry is organized differently [41]. A *Nordic model* of oral healthcare is characterized by a large public dental service, financed by local or general taxation [42]. Dental care is free for citizens until 18 years of age in Denmark and 20 years of age in Sweden. For those who are institutionalized, hospitalized or mentally or physically disabled, dental care is charged up to a maximum yearly fee in Sweden, and in Denmark it has a percentage user's fee. The private sector is partly financed through subsidized services. The dentist/population ratio in Denmark as well as in Sweden was around 1:1200 in 2008, being amongst the highest rates of dentist per citizen in the EU [35]. Both countries have a team-based healthcare service where some aspects of oral healthcare can be provided by dental nurses, dental hygienists and, in Denmark, clinical dental technicians. In 2007, a new law removed limitations to the use of assistance and delegation of all tasks in Denmark, as long as it was done with solicitousness and conscientiousness.

Dentistry in Denmark

The state has a supervisory, regulatory and fiscal role. There are five geographical regions which have the main responsibility, but the 98 local municipalities are accountable for the healthcare services, prevention and health promotion, including dental care for children and the disabled [43]. Adults get a proportion of their dental healthcare costs covered by public insurance, depending on the kind of treatment. A private health insurance, 'Health Insurance Denmark', can give subsidies for dental care; ≈30% of the adult population are members. The active workforce in 2008 was ≈4500 dentists; the proportion of private practitioners was 70%, 45% were men and 55% women. Full-time working hours are 37 hours per week and the normal age of retirement is 67 years in 2010. There is no real competition between public and private dental providers, because they mostly treat different patient groups (however in some municipalities, private providers care for children). Children aged 16 and 17 years can choose between public and private free dental care. Around 95% of all dentists in Denmark are members of the Danish Dental Associations [35,43].

Dentistry in Sweden

Healthcare is provided and financed publicly, where 21 county councils have the overall responsibility for financing and provision of health, including dentistry. Management systems with specific purchaser functions separated from the provider functions have been established in a number of county councils. County councils can impose taxes to finance their activities. For adults, dental care is partly covered by National Social Insurance, a system funded at national level. Subsidies are the same for the two sectors, private and public, amounting to 80% of the cost for extensive dental work but with lower limits for routine dentistry. Patient fees are set by each private practitioner and at the political level in county councils for the public dental health service. The two sectors in principle treat the same types of patients, and the patient has a free choice of provider. Private healthcare providers are remunerated through a fee-for-service, and public healthcare providers are employed on a salary basis. The workforce in Sweden amounted to 7414 active dentists in 2005, 49% of whom were women. The full-time working week is 40 hours and the Swedish retirement age is 65 years. In 2007, ≈56% of dentists were publicly organized, and 44% were privately organized [35]. Of the Swedish dentists, 95% are members of the Swedish Dental Associations [35,44].