K Jerković-Ćosić
MAG van Offenbeek
CP van der Schans

Job satisfaction and job content in Dutch dental hygienists

Authors' affiliations:
K Jerković-Ćosić, Hanze University Groningen, University Medical Center Groningen, University of Groningen – Research and Innovation Group in Health Care in Nursing, Center for Dentistry and Oral Hygiene, Groningen, The Netherlands
MAG van Offenbeek, Department of Innovation Management & Strategy,University of Groningen – Research on Healthcare Organization and innovation, Groningen, The Netherlands
CP van der Schans, Hanze University of Applied Sciences Groningen – Research and Innovation Group in Health Care in Nursing, Groningen, The Netherlands

Correspondence to:
K Jerković-Ćosić
Hanze University Groningen
University Medical Center Groningen
University of Groningen – Research and Innovation Group in Health Care in Nursing
Center for Dentistry and Oral Hygiene
A.Deusinglaan 1
Groningen 9700 AC
The Netherlands
Tel.: +31 623767150
Fax: +31 503632629
E-mail: k.jerkovic@med.umcg.nl; k.jerkovic@chello.nl

Dates:
Accepted 5 June 2012

To cite this article:
Int J Dent Hygiene **10**, 2012; 155–162
DOI: 10.1111/j.1601-5037.2012.00567.x
Jerković-Ćosić K, van Offenbeek MAG, van der Schans CP. Job satisfaction and job content in Dutch dental hygienists.

Abstract: *Objectives:* This study compares the scope of practice of Dutch dental hygienists (DHs) educated through a 2- or 3-year curriculum ('old-style DHs') with that of hygienists educated through a new extended 4-year curriculum leading to a bachelor's degree ('new-style DHs'), with the aim to investigate whether an extended scope of practice positively affects perceived skill variety, autonomy and job satisfaction. *Methods:* The questionnaires were obtained from old- and new-style DHs (n = 413, response 38%; n = 219, response 59%, respectively), in which respondents had recorded their dental tasks, perceived skill variety, autonomy and job satisfaction. *T*-tests were used to analyse differences between old- and new-style DHs, and regression analyses were performed to assess the relation between scope of practice and skill variety, autonomy and job satisfaction. *Results:* New-style DHs have a more extended scope of practice compared with old-style DHs. Despite their more complex jobs, which are theoretically related to higher job satisfaction, new-style DHs perceive lower autonomy and job satisfaction ($P < 0.05$). Skill variety is the strongest predictor for DHs' job satisfaction ($\beta = 0.462$), followed by autonomy ($\beta = 0.202$) and caries decisive tasks, the last affecting job satisfaction negatively ($\beta = -0.149$). Self-employment is the strongest significant predictor for autonomy ($\beta = 0.272$). *Conclusions:* The core business of DHs remains the prevention and periodontology services. New-style DHs combine these tasks with extended tasks in the caries field, which can lead to comparatively less job satisfaction, because of a lower experienced autonomy in performing these extended tasks.

Key words: autonomy; dental hygiene profession; job satisfaction; professional domain; scope of practice; skill variety

Introduction

Extending dental hygienists (DHs)' scope of practice and task redistribution among oral care professionals is a worldwide process, and the task distribution in Dutch oral health care can be seen as a forerunner (1–3). To solve capacity problems in oral health care and following the recommendations of the committee Capacity in Oral Healthcare (4), the Dutch government introduced changes in the educational and legal system to formalize the existing task division and to stimulate further task redistribution. To this end, in 2002, the dental hygiene curriculum was extended to a 4-year bachelor programme offering additional competencies in caries diagnosis and treatment and in applied research.

It is generally expected that for DHs, extending their scope of practice will be a positive career challenge that will allow them to develop and

utilize new competencies (4–6). The government' perspective is that task redistribution will increase job satisfaction because there would be more room for professional development (5,6). In nurse practitioners, who have a similarly extended role as DHs in their respective field, it was shown that their job satisfaction is very high in the first year of work, but steadily falls with each additional year of experience (7). Moreover, worldwide job satisfaction among DHs already tends to be high, if we look to countries as different as the USA (8), Sweden (9) and Australia (10). Dental hygiene is in the Netherlands the second best-paid occupation among professions in applied science (11).

Unfortunately, there is little knowledge on the extent to which educational and legal changes at the societal level impact individual practioners' job content and job satisfaction. Thus, the aim of this article is twofold. First, insight is needed in the extent to which educational and legal interventions are translated into task redistribution between dentists and DHs. Next, an assumption needs to be verified that in an already satisfied population of DHs, further expansion of the scope of practice will heighten job satisfaction. The theoretical lens to study this relation and the underlying mechanisms is presented below.

This study draws on Hackman and Oldham's Job Characteristic Model (JCM) (12) (Fig. 1) to analyse whether an increased job content can contribute to job satisfaction, suggesting that more complex jobs are associated with increased job satisfaction. At the heart of this model are five core job characteristics that contribute to job's complexity: skill variety, task identity, task significance, autonomy and feedback on individual performance. In a meta-analysis including 20 studies, these characteristics taken together by simple addition explained 74% of the variance in overall job satisfaction (13).

Earlier studies demonstrate a relationship between job content and job satisfaction in dental occupations (9, 14, 15). DHs' job satisfaction seems mainly determined by variety in the scope of their practice (14), their supervisor's management skills and interpersonal relationships (15). Skill development opportunities, together with control over job variation, are important determinants of job satisfaction among Swedish DHs (9). Variety of work, satisfaction with colleagues, remuneration, rating of hygiene work as rewarding and not being self-employed are predictors of job satisfaction among UK DHs and therapists (16). Previous studies found self-employment and autonomy to be related to both job content and job satisfaction (11, 17). In conclusion, DHs' intrinsic job satisfaction is to a considerable extent explained by skill variety, skill development opportunities, self-employment and autonomy. Based on these previous findings that in the dental hygiene population, skill variety and autonomy are important contributors to job satisfaction, this article focuses on these two job characteristics and leaves task significance, task identity and feedback aside.

On the one hand, it can be expected that DHs educated for extended scope of practice will have more complex jobs and will therefore experience higher job satisfaction. By combining more tasks in DHs' jobs, the required skill variety will increase. Moreover, when this execution of tasks is also accompanied with the corresponding decision-making authority, this would lead to increased autonomy. On the other hand, closer collaboration and supervision by dentist may be needed when performing these extended tasks. Such might be detrimental to experienced autonomy.

Two groups of DHs with expected difference in job content are included in the study; those from the old curriculum providing a range of preventive and periodontal services, so-called old-style DHs, and DHs from the new curriculum who had been prepared for a more extended scope of practice – new-style DHs. The main research question is the following:

What is the relationship between changed job content on the one hand, and perceived skill variety, autonomy and job satisfaction on the other hand?

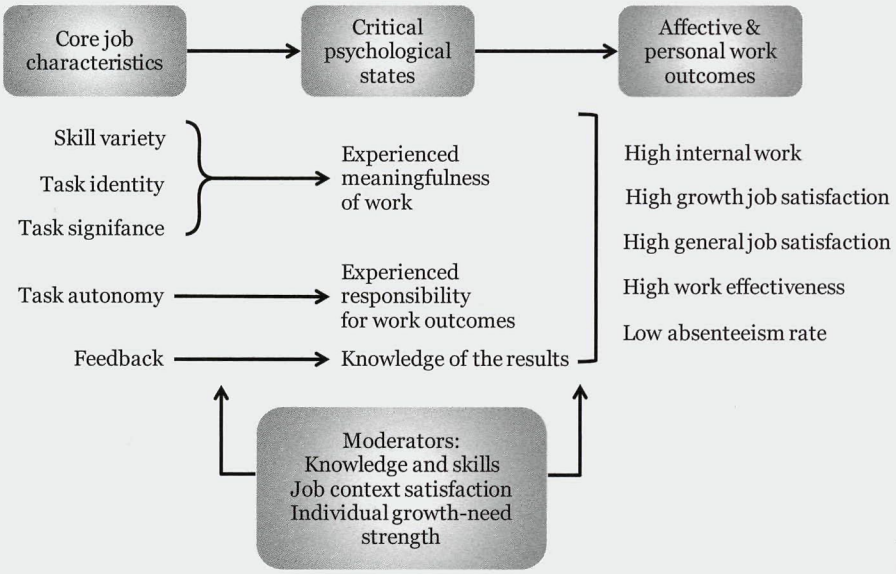

Fig. 1. The Job Characteristics Model [Hackman & Oldham 1980 (12)].

Based on the changes in education of DHs offering knowledge and skills in extended tasks to new-style group, the expectations are raised for new-style DHs to have a more extended job content. Therefore, based on JCM's main principles, a higher skill variety, autonomy and job satisfaction are expected in this group. The data from this study allow testing the following hypotheses concerning the changes in job content and perceived job characteristics and job satisfaction:

Hypothesis 1: Compared to old-style DHs, new-style DHs have a more extended job content.

Hypothesis 2: A more extended job content is positively related to higher skill variety, autonomy and job satisfaction.

Methods

Study population and methodology

The survey data were collected from two populations of Dutch DHs: those from the two- or 3-year curriculum (i.e. old-style DHs) and those from the 4-year curriculum (i.e. new-style DHs) (Table 1).

The measurements were obtained by means of an e-mail linked to an online questionnaire consisting of three parts:

1 Demographical and work setting data: gender, age, years of experience, number of weekly working hours, type of practice and type of employment.
2 Job content: job content was defined by whether respondents engaged in tasks in oral health care and, if so, how frequently. Each task was rated on a five-point scale (ranging from a score of one for never to a score of five for always) for each client, provided the client's condition required the task. The choice of 73 listed tasks was based on an earlier study (18) and on the Omnibus questionnaire from the Data Stations Project – biannual study of the Dutch Dental Association (19).
3 Job characteristics and job satisfaction: job characteristics skill variety and autonomy from the JCM were measured by five items for skill variety and four items for autonomy that were drawn from a Dutch version of an existing questionnaire based on the JCM (20). Job satisfaction was measured by seven items (21). All of the items were scored on a five-point Likert scale.

Table 1. **Overview of two different groups of dental hygienists**

Subsample	Old style	New style
Total population	1724 old-style DHs members of the NVM	425 DHs graduated by August 2008
Exclusion criteria	No e-mail address (n = 515) E-mail error message (n = 122)	Working abroad (n = 4) No e-mail address (n = 52)
n meeting inclusion criteria	1087	369
% response (n)	38 (413)	59 (219)
Measurement performed	December 2009	July 2009

DHs, dental hygienists; NVM, Dutch Association of Dental Hygienists.

Statistical analysis

Data reduction

The number of variables of job content was reduced by grouping tasks based on factor analysis with varimax rotation. Twelve of the 73 items in the questionnaire were excluded from the factor analysis and any further analysis for several reasons (e.g. some tasks were not comparable with any other task regarding their level of complexity or their content and other tasks hardly ever occurred). Two factor analyses were performed: one analysis was performed on the 54 items involved in direct patient care, and the other analysis was performed on the seven items in indirect patient care. Subsequent reliability analyses were performed on each of the twelve task groups obtained in the factor analysis.

Comparison of job content between old- and new-style DHs

Because many DHs combine two or more jobs, the analyses were based on the data from a single practice in which the DHs work the most hours per week. Independent t-tests were used to compare means of task groups, job characteristics and job satisfaction scores between old- and new-style DHs.

Relationships between job content, job complexity and job satisfaction

Multiple linear regression analyses were conducted to examine the observed relations between job content, job characteristics and job satisfaction (Fig. 2). In the first step, task groups were used as independent variables to explain job characteristics and job satisfaction. In the second step, job content, job characteristics and self-employment variables were used to explain job satisfaction. In the third step, the mediator role of job characteristics in the relation between job content and job satisfaction was tested (22).

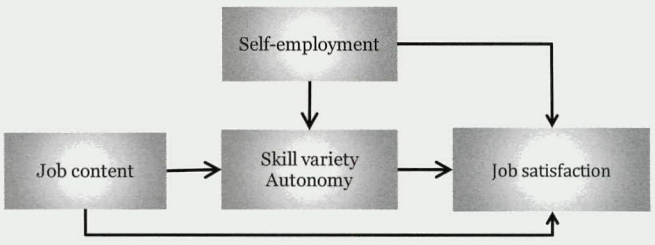

Fig. 2. Test model.

Results

The demographical data are presented in Table 2. The mean (standard deviation SD) working hours in the new-style population was 32.2 (SD = 7.5) compared with 27.1 (SD = 8.06) in the old-style group ($P < 0.001$). In addition, new-style DHs were less likely to work in dental hygiene practices compared with old-style DHs.

Based on the factor analysis on the items in direct patient care, ten factors were distinguished. Factor analysis of items in the indirect patient care resulted in two separate factors. In total, twelve different task groups were distinguished. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.89 and 0.81, and Bartlett's test of sphericity was significant ($P < 0.001$) in both factor analyses. All task groups with the number of tasks and Cronbach's alpha values (all > 0.75) are presented in Table 3.

Old- and new-style DHs in our study differ significantly in their job content (Table 4). Old-style DHs performed intakes and preventive tasks more often than the new-style DHs. New-style DHs, however, performed administration of local anaesthesia, caries decisive tasks and caries treatments more often than the old-style DHs. Therefore, the first hypothesis is confirmed; indeed, new-style DHs have more extended job content compared to the old-style group.

There are also statistically significant differences in perceived autonomy and job satisfaction between old- and new-style DHs (Table 5). Old-style DHs experienced higher level of autonomy compared to the new style, and they are more satisfied with their jobs, which is in contrast to the second hypothesis. The small differences in skill variety between groups are not statistically significant.

Of perceived skill variety, 15.6% is explained by tasks in caries treatment, oral healthcare policy and orthodontics (Table 6). All three are positively related to skill variety. However, caries treatment and orthodontics tasks negatively affect perceived autonomy ($\beta = -0.223$ and -0.106, respectively). Perceived autonomy is positively related to tasks in periodontology, caries decisive tasks and oral healthcare policy tasks. Self-employment seemed to be the strongest significant predictor for autonomy ($\beta = 0.272$).

Only a small part (5.4%) of perceived job satisfaction among DHs is explained by job content and self-employment. Far stronger predictors of job satisfaction are skill variety and autonomy. In this final model (Fig. 3), 30.1% of intrinsic job satisfaction is predicted by skill variety ($\beta = 0.462$), autonomy ($\beta = 0.202$) and caries decisive tasks, the last affecting job satisfaction negatively ($\beta = -0.149$). The roles of oral healthcare policy tasks and of self-employment as two significant predic-

Table 2. **Demographical data of the subsamples**

Demographical data	Old style $n = 412$ Mean (SD)	New style $n = 219$ Mean (SD)
Age (mean, SD)	40.5 (9.1)	26.0 (3.5)
% Female	98	94
Experience in years (mean, SD)	16.9 (9.1)	Max 3
Weekly working hours (mean, SD)	27.1 (8.1)	32.2 (7.5)
% Working majority of hours in dental hygiene practices	42.8	13.3

Table 3. **Task groups and results of reliability analysis**

Task group	*n* tasks	Cronbach's alpha
Intake	2	0.77
Prevention	4	0.90
Periodontology	7	0.90
Orthodontics	4	0.75
Local anaesthesia	4	0.87
Caries diagnosis and treatment planning	6	0.88
Caries decision-making	7	0.95
Caries executive tasks	13	0.97
Extraction	4	0.83
Evidence-based practice	3	0.81
Oral health policy	4	0.85
Scientific research	3	0.88
Total	61	

Table 4. **Job content in old- and new-style dental hygienists, mean (SD), 1 = never perform this task when needed by a client; 5 = always perform this task when needed by a client**

Task groups	Old style Mean (SD) $n = 413$	New style Mean (SD) $n = 219$	*t*-test *P*-value
Intake	4.1 (1.07)	3.6 (1.28)	<0.001
Prevention	4.9 (0.34)	4.7 (0.62)	<0.001
Periodontology	4.4 (0.57)	4.2 (0.86)	0.058
Orthodontics	1.6 (0.72)	1.7 (0.80)	0.085
Local anaesthesia	3.4 (1.20)	4.1 (0.95)	<0.001
Caries diagnosis and treatment planning	3.1 (0.87)	3.2 (0.99)	0.115
Caries decision-making	1.6 (0.97)	2.4 (1.31)	<0.001
Caries treatment	1.6 (0.86)	2.7 (1.29)	<0.001
Extraction	1.3 (0.58)	1.4 (0.75)	0.012
Evidence-based Practice (EBP)	2.8 (0.83)	2.8 (0.95)	0.617
Oral health policy	3.1 (1.20)	3.1 (1.10)	0.808
Scientific research	1.6 (0.88)	1.7 (0.92)	0.034

Table 5. **Job characteristics and job satisfaction in old- and new-style dental hygienists, mean (SD)**

Job characteristics and job satisfaction scales	Old style Mean (SD) $n = 412$	New style Mean (SD) $n = 219$	*P*-value *t*-test
Skill variety	3.8 (0.77)	3.9 (0.83)	0.420
Autonomy	4.5 (0.51)	4.3 (0.54)	<0.001
Intrinsic job satisfaction	4.4 (0.50)	4.2 (0.60)	<0.001

Table 6. **Multiple regression models for job characteristics and job satisfaction in relation with job content and self-employment**

Dependent variables	Significant predictor(s)	β	*P*-value	Adjusted R^2	*F* (d.f.)
Skill variety	Caries treatment	0.184	0.013	0.156	9.044 (13, 566)
	Oral healthcare policy	0.107	0.023		
	Orthodontics	0.113	0.007		
Autonomy	Self-employment	0.272	<0.001	0.198	12.026 (13, 580)
	Oral healthcare policy	0.154	0.001		
	Orthodontics	−0.106	0.008		
	Periodontology	0.167	0.001		
	Caries treatment	−0.223	0.002		
	Caries decisive tasks	0.162	0.038		
Job satisfaction*	Oral healthcare policy	0.180	<0.001	0.053	3.552 (13, 598)
	Self-employment	0.100	0.028		
Job satisfaction	Skill variety	0.462	<0.001	0.301	16.825 (15, 551)
	Autonomy	0.202	<0.001		
	Caries decisive tasks	−0.149	0.049		

*This regression analysis is performed with job content and self-employment as predictors.

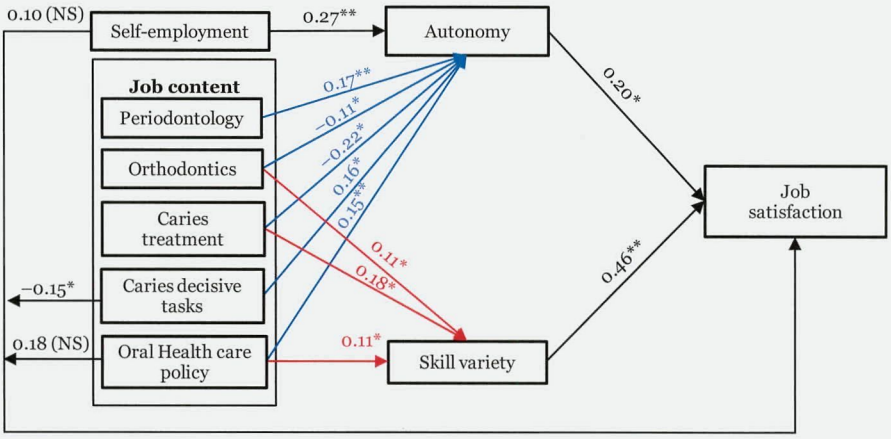

Fig. 3. Final model. *P< 0.05; **P < 0.001; NS, not significant.

tors for job satisfaction are mediated by the job characteristic autonomy in this model.

Discussion

As expected, compared to the old-style DHs, new-style DHs have a more extended job content; they perform more often extended tasks in caries decision-making, caries treatment and administration of local anaesthesia. New-style DHs' education in caries treatments and decision-making seems to have resulted in them more frequently performing these tasks. Nevertheless, the differences in caries diagnosis and treatment planning tasks are not statistically significant. One possible explanation is that these competences were already included in the old curricula; they are only more extensively covered now. In addition, the old-style DHs may more often engage in caries diagnosis, because on average, they are far more experienced.

Next to education and experience, differences in job contents between the old- and the new-style groups seem to stem from the different rate of self-employment; old-style DHs work significantly more often in their own practices compared to the new-style group. The less expanded job content in these mono-disciplinary dental hygiene practices is already found in another Dutch study among 320 old-style DHs (17).

While the new-style DHs tend to have expanded their scope more often to cure-oriented tasks, the old-style group performs considerable more often intakes and prevention activities. This may explain why we found that on average the new-style DHs perceive less autonomy and lower job satisfaction. Caries treatments require dentists that assign these tasks to DHs and often, in the first years after graduation, also dentist supervision. Decrease in perceived autonomy, because of employees' feeling less independent in performing tasks and need for supervision, is also reported by Green (23). Performing caries treatments adds to skill variation, but lowers autonomy and also has a direct negative influence on intrinsic job satisfaction. Increased experience of new-style DHs could affect their scope of practice and therefore also their perceived autonomy and job satisfaction. It is also possible that new-style DHs have higher expectations regarding their jobs and scope of practice, affecting their perceived autonomy and job satisfaction negatively. However,

these post hoc explanations are speculative and need empirical support.

One might expect that differences in the curricula between the four dental hygiene schools in the Netherlands affect DHs' expectations, scope of practice and job satisfaction. However, despite the small differences in the current job content of the new-style DHs educated at different schools, they do not significantly differ regarding their perceived job characteristics and job satisfaction (24). Again, the presence and the effect of different DHs' expectations, related to the dental hygiene schools, need further empirical investigation.

The relationship between job characteristics and job satisfaction is the most studied relationship in previous research on the JCM. A meta-analysis shows a strong positive association between JCM's five job characteristics and job satisfaction (13). As a single job characteristic, skill variety explains most of the variation in job satisfaction, which confirms earlier studies that identified skill variety as a dominant job characteristic determining DHs' intrinsic job satisfaction (9, 14, 16). Our study contributes by showing the possible tension between skill variety and autonomy for DHs in the multidisciplinary oral care domain.

Almost half of the old-style DHs run their own business (Appendix I). This result suggest that many old-style DHs have found a way to resolve the apparent tension between skill variety and autonomy: they craft an intrinsically rewarding job by accepting relatively restricted scope of practice, but compensating this with self-employment in mono-disciplinary setting. Although self-employment has no direct relation with intrinsic job satisfaction, it indirectly contributes to satisfaction through its strong positive relation with perceived autonomy. Self-employed DHs perceive significantly higher autonomy (Appendix II). They have their own clientele and entrepreneurial responsibilities and will experience more discretion in work scheduling, work methods, priority setting and quality management practices. These findings support earlier work that reported higher experienced autonomy among self-employees (25, 26) and add insights on trade-offs that DHs make either consciously or unconsciously.

Previous findings reported a positive correlation between autonomy and skill variety; jobs with high autonomy generally have more variety (27). Skill variety among new-style DHs in our study was only slightly higher than for old-style DHs and negatively related to autonomy. This suggests that the expanded occupational scope of practice has only resulted in weak job enlargement (28) (adding more operational tasks) and not in job enrichment (adding decision-making authority and responsibilities).

These results ask for a critical reflection on the merits of task redistribution between dentistry and dental hygiene for the latter profession. We find no systematic contribution of an expanded scope of practice to job satisfaction. Indeed, currently the old-style DHs, even those with a more restricted job content, tend to be more satisfied with their jobs than the recently graduated new-style ones. It can be concluded that current forms of task redistribution do lead to job enlargement, but not (yet) to enriched jobs that are more challenging and thus potentially more satisfying.

One position in the debate on task redistribution could be that there is nothing to worry about because many studies (8–10), as well as this study, show that DHs are very satisfied anyhow. An opposite position could be that to improve and further develop dental health care and stimulate the team working that has been proposed (2, 4, 5), task redistribution should be implemented in a way that it is beneficial to patients, dentists and DHs alike. This is a direction for future study.

Strengths and weaknesses

An overview of previous studies (29) concludes that 'the utilization of subjective job characteristics reported by workers seems to have weathered rigorous empirical investigation'. This is the motivation to draw on the JCM view in this study despite the perceptual nature of its conceptual components. Moreover, the data on one's actual work activities and the demographical data are relatively straightforward and less prone to be biased by perception, and the satisfaction data are inherently subjective in nature. Nevertheless, a methodological limitation is that for all variables, self-report measures were obtained, which carries the risk of common method variance.

Conclusion

In conclusion, the changes in education and legislation have had some effect on DHs' current job content in the Netherlands. However, the core business of DHs remains the traditional prevention and especially periodontology services. New-style DHs tend to combine these tasks with some extended tasks in the caries field. Such a more expanded scope of practice for more highly educated DHs can lead to comparatively less job satisfaction, because of a lower experienced autonomy in performing these extended tasks. Job satisfaction can be explained by the job characteristics skill variety and autonomy, but some tasks also directly affect intrinsic job satisfaction, that is, performing caries treatments has a negative influence on intrinsic job satisfaction. The results raise policy questions for the future direction of professional development and suggest that more research is needed on interprofessional cooperation.

Acknowledgements

This study was obtained and funded within the PhD project at Hanze University Groningen -University of Applied Sciences and University of Groningen. There is no conflict of interest involved.

The authors gratefully acknowledge the Nederlandse Vereniging van Mondhygienisten (Dutch Association of Dental Hygienists) for their cooperation during the gathering of data.

References

1 Johnson PM. International profiles of dental hygiene 1987 to 2001: a 19-nation comparative study. *Int Dent J* 2003; **53**: 299–313.

2 voor de Volksgezondheid R, Zorg RVZ. The Innovation in Oral Healthcare Committee; 2006.

3 Johnson PM. International profiles of dental hygiene 1987 to 2006: a 21-nation comparative study. *Int Dent J* 2009; **59**: 63–77.

4 VWS. *Capaciteit Mondzorg Aanbevelingen voor de korte en lange termijn. Eindrapport van de adviesgroep capaciteit mondzorg.* Den Haag: Adviesgroep Capaciteit Mondzorg Ministerie, VWS; 2000.

5 RVZ. *Taakherschikking in de gezondheidszorg. Adviesrapport door de Raad voor de Volksgezondheid en Zorg uitgebracht aan de minister van Volksgezondheid, Welzijn en Sport.* Zoetermeer: RVZ; 2002.

6 Heuvel Van der J, Jongbloed-Zoet C, Eaton K. The new style dental hygienist – changing oral health care professions in the Netherlands. *Dent Health* 2006; **44**: 3–10.

7 Kacel B, Millar M, Norris D. Measurement of nurse practitioner job satisfaction in a Midwestern state. *J Am Acad Nurse Pract* 2005; **17**: 27–32.

8 Boyer EM. Job satisfaction among dental hygienists. *J Dent Hyg* 1990; **64**: 235–238.

9 Ylipaa V, Arnetz BB, Preber H, Benko SS. Determinants of work satisfaction among Swedish dental hygienists. *Scand J Caring Sci* 1996; **10**: 247–253.

10 Hopcraft M, McNully C, Ng C *et al.*Attitudes of the Victorian oral health workforce to the employment and scope of practice of dental hygienists. *Austr Dent J* 2008; **53**: 67–73.

11 Centrum Hoger Onderwijs Informatie. Keuzegids Hoger Beroepsonderwijs – HBO voltijd. Leiden, 2011.

12 Hackman JR, Oldham GR. *Work Redesign.* Reading, MA: Addison-Wesley; 1980.

13 Fried Y, Ferris GR. The validity of the job characteristics model: a review and meta-analysis. *Pers Psychol* 1987; **40**: 287–322.

14 Calley KH, Bowen DM, Darby ML, Miller DL. Factors influencing dental hygiene retention in private practice. *J Dent Hyg* 1996; **70**: 151–160.

15 Bader JD, Sams DH. Factors associated with job and career satisfaction among dental hygienists. *J Public Health Dent* 1992; **52**: 43–51.

16 Turner S, Ross MK, Ibbetson RJ. Job satisfaction among dually qualified dental hygienist-therapists in UK primary care: a structural model. *Brit Dent J* 2011; **210**: E5.

17 Jerkovic K, Offenbeeek van MAG, Schans van der CP. Taakherschikking in de Nederlandse mondzorg en de werktevredenheid van mondhygiënisten. *Ned tijdschrift voor Tandheelkunde* 2010; **117**: 289–294.

18 Kerckhoffs A. *Een tandje hoger in de tandheelkunde. Senior thesis.* Erasmus Medisch Centrum Rotterdam, Nijmegen: Erasmus Medisch Centrum, Universitair Medisch Centrum St. Radboud; 2002.

19 NMT. *Omnibus Enquête en het onderzoek Tandheelkundige praktijkvoering.* Nieuwegein: NMT Nederlandse Maatschappij ter bevordering van Tandheelkunde; 2002.

20 Biessen PGA. *Oog voor de menselijke factor, Achtergrond, constructie en validering van de Basisvragenlijst. Academisch Proefschrift.* Amsterdam: Universiteit van Amsterdam; 1992.

21 Hellenthal A. *Vragenlijst 'Samen werken in teams', Faculteit Bedrijfskunde.* Groningen: RuG; 2001.

22 Baron RM, Kenny DA. The moderator–mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *J Pers Soc Psychol* 1986; **51**: 1173–1182.

23 Greene CN. Some effects of a job enrichment program: a field experiment. *Proc Acad Manage* 1981; **41**: 281–285.

24 Jerkovic K. Takenpakket van mondhygiënisten Bachelor of Health 2e meting; Bevindingen van een deelonderzoek naar taakherschikking in tandheelkunde; 2009.

25 Hamilton BH. Does entrepreneurship pay? An empirical analysis of the returns to self-employment *J Pol Econ* 2000; **108**: 604–631.

26 Fay BS, Benz M. *Being Independent is a Great Thing: Subjective Evaluations of Self-Employment and Hierarchy.* Institute for Empirical Research in Economics University of Zurich; 2003.

27 Taber TD, Taylor E. A review and evaluation of the psychometric properties of the job diagnostic survey. *Pers Psychol* 1990; **43**: 467–500.

28 Herzberg F. One more time, how do you motivate workers? *Harvard Business Rev* 2003; **1**: 87–96.

29 Boonzaier B, Ficker B, Rust B. A review of research on the job characteristics model and the attendant job diagnostic survey. *S Afr J Bus Manag* 2001; **32**: 1.

Appendix I. Work setting and employment arrangement in old- and new-style group

Population	Old style %			New style %			*P*-value
Employment arrangement	DH practices	Other setting	Total	DH practices	Other setting	Total	Chi-squared test
Self-employed	91.9	17.8	49.5	35.7	14.2	17.1	<0.001
In employment	7.0	70.0	43.0	57.1	75.4	73.0	<0.001
Commission on turnover	1.1	12.2	7.5	3.6	9.3	8.5	0.864
Other	0	0	0	3.6	1.1	1.4	<0.001
Total *n* (%)	172 (42.8)	230 (57.2)	402 (100)	28 (13.3)	183 (86.7)	211 (100)	

DH, Dental hygiene.

Appendix II. Job characteristics and job satisfaction in employed and self-employed old-style dental hygienists, mean (SD)

Job characteristics and job satisfaction scales	Employed old-style DHs Mean (SD) $n = 173$	Self-employed old-style DHs Mean (SD) $n = 199$	*P*-value *t*-test
Skill variety	3.9 (0.78)	3.8 (0.74)	0.542
Autonomy	4.3 (0.55)	4.6 (0.43)	<0.001
Intrinsic job satisfaction	4.3 (0.47)	4.4 (0.51)	0.148

DHs, dental hygienists.