

Measurement of attitudes of UK dental practitioners to core job constructs.

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Objectives: To develop a measure to identify dental practitioner attitudes towards core job dimensions relating to job satisfaction and motivation and to test this against practice characteristics and provider attributes of UK practitioners. **Research design:** an 83-item questionnaire was developed from open-ended interviews with practitioners and use of items in previously used dentist job satisfaction questionnaires. This was subsequently sent to 684 practitioners. Item analysis reduced the item pool to 40 items and factor analysis (PCA) was undertaken. **Results:** 440 (64%) dentists responded. Factor analysis resulted in six factors being identified as distinguishable job dimensions, overall Cronbach's alpha = 0.88. The factors were: 'restriction in being able to provide quality care (F1)', 'respect from being a dentist (F2)', 'control of work (F3)', 'running a practice (F4)', 'clinical skills (F5)', and 'caring for patients (F6)'. All six factors were correlated with a global job satisfaction score, although F1 was most strongly related ($r=0.60$). Regression model analysis revealed that 'whether the dentist worked within the National Health Service or wholly or partly in the private sector' ($p<0.001$), 'time since qualification' ($p=0.009$), and the position of the dentist within the practice (whether a practice owner or associate dentist), ($p=0.047$) were predictive of this factor. **Conclusions:** Six core job constructs of UK practitioners have been identified, together with several practice characteristics and practitioner attributes which predict these factors. The study demonstrates the importance of refining measures of dentists' job satisfaction to take account of the culture and the system in which the practitioner works.

Keywords: Financing, job motivation, job satisfaction, quality.

Introduction:

Job satisfaction is an individual's emotional response to his or her job situation. Study of dentists' job satisfaction is seen as an important barometer of the profession, and a way in which issues relating to recruitment and retention of the workforce can be understood, and providers' reactions to changes in the organisation and financing of dental care delivery can be monitored (Shugars *et al.*, 1990).

It has also been suggested that understanding job satisfaction helps to understand factors that influence dentists' productivity (Wells and Winter, 1999). It is assumed that 'a satisfied worker is a good worker'. However, equating satisfaction with motivation is an over-simplification (Cameron, 1973). Herzberg's motivation-hygiene theory draws a distinction between 'satisfiers' and 'motivators' (Herzberg *et al.*, 1959). He describes satisfiers (or hygienes) as those elements of the job such as salary which if unfavourable, can lead to job dissatisfaction. Addressing these issues can placate the workforce, but does not necessarily motivate them. In order to motivate people, it is suggested that intrinsically rewarding aspects of the job such as recognition, and achievement are more important. It is therefore more correct to draw a distinction between facets of jobs which contribute towards job satisfaction and job motivation when describing core job constructs, particularly when concerned with issues relating to productivity.

It is therefore appropriate to identify the key aspects (or facets) of a job which contribute to both how individuals' feel about their job, and explain how they behave in terms of productivity, absence and turnover. Two earlier studies (Chapko *et al.*, 1986; Shugars *et al.*, 1990) have previously developed measures involving subscales of dentists' job satisfaction facets and reported data on instrument validity and reliability. However, both were based on American dental practitioners, and dentists' job satisfaction is inevitably influenced by cultural values as well as the system in which the dentist works.

This paper describes the development and validation of a measure of job satisfaction and motivation which is applicable to dental practitioners in the UK. Dentists' job satisfaction is a particularly pertinent issue in the UK at the present time, since over recent years there has been a steady shift of practitioners from National Health Service (NHS) provision into the private sector (Lynch and Calnan, 2003). Whilst health care in the UK is predominantly state-financed, with approximately 85% of funding coming from the public purse, the use of private health care services is rising (Propper, 2000). In contrast to UK general medical practitioners where there is a financial penalty in mixing state-funded and private practice, general dental practitioners (GDPs) do not have this restriction. They have the option to carry out a mix of NHS and private work. In 2001, it was reported that approximately 50% of GDPs nationally concentrate on NHS dentistry, based on figures where

treatment was carried out on an NHS basis for 85% or more of patients (Buck, 2001). The balance between NHS and private provision however is shifting, with practitioners earning 48% of their gross income from NHS work in 2004/2005, down from 54% in the previous year (Information Centre, 2006). Understanding dentists' attitudes to core job constructs in this situation will help in explaining their motives behind the shift away from a publicly financed system, and also enhance our general understanding of how dental practitioner job satisfaction is constructed.

Method

Development of the item pool

A conceptual approach was taken in the development of the questionnaire, based on Alderfer's ERG theory (Aldefer, 1973) which suggests that individual's needs can be divided into three groups: 'existence needs' (e.g. pay and conditions), 'relatedness needs' (relations with family, friends, colleagues), and 'growth needs' (desire for personal development). Items relating to these domains were gathered from a number of sources. Some items were taken from the Dentist Satisfaction Survey developed by Shugars *et al.* (1990) which contains 54 items within 13 dimensions relating to job satisfaction. Further items were developed from statements made by 13 UK dental practitioners during semi-structured interviews. These interviews specifically explored job motivation and job satisfaction among dentists working in wholly NHS practices, wholly private practices and in practices where a mix of NHS and private work was undertaken. Participants included both male and female dentists, and associate dentists as well as practice owners.

Scale development

The initial questionnaire contained 42 items relating to job motivation (for example: 'Gaining respect from dentists is a reason I work hard'), 42 items containing statements relating to job satisfaction (for example: 'Having patients leave my surgery happy is satisfying') and 47 items relating to how dental practitioners viewed various aspects of their job situation (for example: 'I feel stressed in my job'). All items were written in a 5-point Likert format with a score range from 5 (strongly disagree) to 1 (strongly agree). The items were presented in a random order in the questionnaire with 13 items requiring reverse scoring in the analysis.

The item pool was initially refined after completion of the questionnaire by 30 UK practitioners. The practitioners chosen for this pilot phase were a convenience sample of those located near to the research team. They were then excluded from the main study. Using item analysis the item pool was reduced to 31 items relating to job satisfaction (Chronbach's alpha=0.95); 28 items relating to job motivation (Chronbach's alpha=0.92), and 24 items relating to general attitudes towards their current work situation (Chronbach's alpha=0.92). Fourteen of the items originated from the Dentists' Satisfaction Survey (Shugars *et al.*, 1990). The practitioners involved in the development phase were also asked to complete repeat questionnaires to test for questionnaire reliability. Twenty five repeat questionnaires were returned. Test/

retest analysis on the items in the final version of the questionnaire indicated a reasonably high level of reliability of the instrument under development ($r=0.78$); although it should be noted that this analysis was based on a relatively small number of respondents.

The questionnaire was then sent to all dental practitioners working in 14 Primary Care Trusts (PCTs) in three areas of England (Cheshire and Merseyside, Cumbria and Lancashire, Shropshire and Staffordshire). The PCTs were selected to ensure a balance between high and low disease levels, and rural and urban areas. Questionnaires were sent to a total of 684 practitioners, between January and March 2006.

Analysis

Prior to psychometric analysis using explorative factor analysis (PCA), items were further reduced using item analysis. The objective of the item analysis was to develop internal reliability by identifying and then rejecting statements which were negatively correlated with the questionnaire responses as a whole. Item-total correlations, means and Chronbach's alpha were calculated for each item. Items with poor internal reliability were discarded before further analysis. PCA, with varimax rotation was undertaken on the remaining 40 items. The factor analysis grouped items that were answered in similar ways, identified as those with an Eigen value of 1.0 or over. An item was considered to load onto a factor if it had a loading of greater than 0.3 (Armitage and Conner, 1999). The statements within each factor were examined to see what common thread existed, and an appropriate descriptive name was given to each factor. Analysis of the association of factors with practice characteristics and practitioner attributes was undertaken using stepwise regression model analysis. Correlation of factors with a global job satisfaction score was undertaken using Pearson's product moment correlation coefficient.

Results

After a total of three mailings, 446 (65.2%) practitioners returned questionnaires, although there were six incomplete returns, leaving 440 (64.3%) responses for analysis. Respondents consisted of 292 (65.5%) males and 154 (34.5%) females. Their mean age was 42.1 years ($sd=10.1$). Non-responders were reasonably spread over the areas in the sampling frame, with the response rate varying from 60% to 79%.

The factor analysis identified six item groupings as distinguishable job dimensions (Table 1), accounting for 52% of the variance. The factors were as follows: Factor 1: restriction in being able to provide quality care (Chronbach's alpha = 0.88); Factor 2: respect from being a dentist (Chronbach's alpha = 0.80); Factor 3: control of work (Chronbach's alpha = 0.80); Factor 4: running a dental practice (Chronbach's alpha = 0.80); Factor 5: developing clinical skills (Chronbach's alpha = 0.81); Factor 6: helping people (Chronbach's alpha = 0.75). Each factor therefore formed a subscale with satisfactory to good internal reliability. The overall Chronbach's alpha was 0.88. The KMO measure of sampling accuracy was high (0.877), and the Bartlett test of sphericity was significant ($p<0.001$) demonstrating that the items were

Table 1. Item loadings for the 6 factors identified, ordered by the coherence of the items in the factor, and identified with the ERG theory domain in which the item was placed when developing the item pool

Factor 1: Restriction in being able to provide quality care ($\alpha=0.88$)		
<i>Items within the factor</i>	<i>Item loadings</i>	<i>Domain*</i>
I do not have enough time to devote to my patients' needs	0.796	G
I feel I am on a treadmill in my job	0.783	G
I am not happy with my current work-rate	0.761	G
I lack opportunities to provide quality care	0.739	G
My power to decide what treatment I should provide for my patients is restricted	0.723	G
I have the freedom to decide how long to spend on treatments	0.639	G
I am often unable to meet patients' expectations	0.637	R
I feel stressed in my job	0.632	G
The majority of my patients do not value dentistry	0.548	G
I feel that the opportunity for me to develop a specialist interest is limited	0.537	G
I earn as much as I feel I should for the work I do	0.485	E
Factor 2: Respect from being a dentist ($\alpha=0.80$)		
<i>Items within the factor</i>	<i>Item loadings</i>	<i>Domain*</i>
I feel satisfied when I gain respect from other dentists	0.738	G
I work hard to be a respected person in the community	0.736	G
Being a respected person in the community is satisfying	0.700	G
I work hard in order to gain respect from patients	0.645	G
Gaining respect from other dentists is a reason I work hard	0.605	G
I work hard to gain respect from staff in the practice	0.559	G
Factor 3: Control of work ($\alpha=0.80$)		
<i>Items within the factor</i>	<i>Item loadings</i>	<i>Domain*</i>
Being in control of which patients I treat is satisfying	0.759	G
Being able to control which patients I treat motivates me	0.678	G
Being able to decide how many patients I treat per session is satisfying	0.663	G
Being able to determine my hours of work motivates me	0.640	G
Being able to make my own decisions regarding clinical work is satisfying	0.571	G
Having the flexibility to determine my income level motivates me	0.550	E
Earning an income which is sufficient for my family's needs is satisfying	0.512	E
Factor 4: Running a dental practice ($\alpha=0.81$)		
<i>Items within the factor</i>	<i>Item loadings</i>	<i>Domain*</i>
Being able to make my own decisions about how the practice is run is satisfying	0.774	G
Being able to develop the practice as a business is satisfying	0.749	G
I am satisfied with being able to make my own decisions about how the practice is run	0.725	G
I work hard to maintain a buoyant practice	0.613	G
Being able to make my own decisions about how the practice is run motivates me to work hard	0.604	G
I feel motivated to create a nice atmosphere amongst staff in the practice	0.459	R

Table 1 continued on next page...

Factor 5: Developing clinical skills ($\alpha=0.806$)		
<i>Items within the factor</i>	<i>Item loadings</i>	<i>Domain*</i>
Having time to improve my clinical skills is satisfying	0.804	G
I am driven to keep up with current advances in dentistry	0.740	G
I am driven to produce high quality clinical work	0.652	G
Being able to keep abreast of advances in dentistry is satisfying	0.649	G
Having time to improve my clinical skills motivates me to work hard	0.536	G

Factor 6: Helping people ($\alpha=0.75$)		
<i>Items within the factor</i>	<i>Item loadings</i>	<i>Domain*</i>
Being able to relieve people's pain is satisfying	0.783	R
I am motivated by being able to relieve people's pain	0.781	R
Being able to help people in my job is satisfying	0.722	R
I find it satisfying to show patients how to achieve good dental health	0.459	G
Providing a service for all those who need it is satisfying	0.437	R

* E= Existence Needs, R=Relatedness Needs, G=Growth Needs

acceptably correlated. These results confirm that a factor analysis was appropriate for these data.

The original hypothesized dimensions based on Alderfer's ERG theory included: 'income', 'leisure time', 'relations with staff and colleagues' 'relations with patients', 'relations with the community', 'control', 'respect', 'running a practice', and developing skills', and were based around the domains of 'Existence Needs', 'Relatedness Needs', and 'Growth Needs'. 'Income', 'leisure time', 'relations with staff and colleagues', 'relations with patients' and 'relations with the community' did not emerge as factors in the analysis per se. Table 1 indicates which domain the item had been originally located in, when initially assembling the item pool. It is apparent that the items making up Factors 1 to 5 are predominated by items taken from the 'Growth Needs' domain; and it could be argued that the exceptions, for example 'I earn as much as I feel I should for the work I do' is perceived by the GDPs as a statement related less about their need for a good income, and more about a desire to undertake clinical work of which they feel proud. As such, this too, would have been better placed within the 'Growth Needs' domain. Factor 6 (helping people) is the only factor predominated by items from the 'Relatedness Needs' domain.

The strength of feeling in relation to these factors is measured by the means from the response categories of all items in the factor, with 1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree and 5=strongly agree. Factor 6 was the most strongly held attitude with a mean of 4.04 (sd=0.51), followed by Factor 5 (mean=3.87, sd=0.60), Factor 4 (mean=3.77, sd=0.58), Factor 2 (mean=3.70, sd=0.57), Factor 3 (mean=3.68, sd=0.57) and Factor 1 (mean=2.93, sd=0.75).

Significant differences were seen between males and female practitioners in their strength of attitude to Factor 2 (respect from being a dentist), with females holding a more positive attitude (mean=3.80, sd=0.54) compared to males (mean=3.64, sd=0.58); in Factor 4 (running a dental practice), with males holding a more positive attitude (mean=3.81, sd=0.56) compared to females (mean=3.68, sd=0.59); and in Factor 5 (developing clinical skills; mean= 3.96, sd=0.59) and Factor 6 (helping people; mean=4.13, sd=0.46), with females holding a more positive attitude than males (mean=3.82, sd=0.60 and mean= 3.99, sd=0.53 respectively).

Differences were also seen between practitioners working in urban, suburban and rural practices in relation to Factor 1 (restriction in being able to provide quality care). Dentists working in rural practices (n=77), had a mean score of 3.08 (sd=0.77); compared to those working in suburban areas (n=213) who gave a mean score of 2.97 (sd=0.71) and those in urban areas (n=146) who gave a mean score of 2.79 (sd=0.76) for this factor. Dentists working as single-handed dentists (n=60) showed a stronger attitude towards Factor 4 (running a dental practice), mean=3.95(sd=0.55), than those working alongside other dentists in multi-surgery practices (n=376), mean=3.74, sd=0.57.

Dentists who had qualified before 1987 (n=219) had a more positive attitude to Factor 4 (running a dental practice), mean=3.86, sd=0.56, than those who had qualified since (n=221) where the Factor mean was 3.67, sd=0.58). Practice owners (n=236) also had a more positive attitude to Factor 4 (mean=4.04, sd=0.45) than associate dentists (n=194), mean=3.43, sd=0.53.

Of the 440 dentists, 161 (37%) reported working completely within the NHS system, and 279 (63%) reported working either partly or completely within the private sector. Table 2 compares the attitudes held by practitioners working under different models of financing. Differences are particularly apparent in relation to Factor 1 (restriction in being able to provide quality care), Factor 3 (control of work) and Factor 5 (developing clinical skills) with dentists working either partly or wholly within the private system holding more positive attitudes.

Regression model analysis results for each factor are reported in Table 3, which takes account of some interaction between practitioner characteristics. Three factors; whether the practitioner worked within NHS or wholly or partly within on a privately financed basis, the number of years since the practitioner had qualified as a dentist, and the position of the dentist within the practice i.e. whether the dentist was the owner/principal or an associate/assistant dentist, were significantly associated with Factor 1 attitudes (restriction in being able to provide quality care). NHS and younger practitioners, as well as practice owners were most likely to feel less positive about being able to provide quality care given the restrictions of the system.

Working within the NHS as opposed to within a private system was also associated with Factor 3 (control of work) and Factor 5 (developing clinical skills). Gender emerged as a characteristic associated with Factor 2 (respect from being a dentist), Factor 5 (developing clinical skills) and Factor 6 (helping people). The position of the dentist within the practice (whether the principal/owner or an associate/assistant dentist) was the only significant characteristic associated with Factor 4 (running a dental practice).

All six factors were significantly correlated ($p < 0.01$) with a global measure of job satisfaction composed of a 5 point scale from feeling very satisfied to very dissatisfied overall with one's job. Global job satisfaction was

most highly correlated however with Factor 1 (restriction in being able to provide quality care), with Pearson's correlation = 0.60. (Table 4)

Discussion

The sample used is considered to be representative of the wider population of dentists within the UK, especially in terms of the gender balance of the respondents. Data reported by the UK General Dental Council (2005), that at the end of 2005, 37% of registered dentists were female, suggests that the sample roughly reflects the UK dental population in general, particularly since a smaller proportion of women work in general dental practice as opposed to the Hospital and Community Dental Services (Newton *et al.*, 2000), and these are included within the GDC figure.

Although a range of possible dimensions were included in the questionnaire, the dimensions 'income', 'leisure time', 'relations with staff and colleagues', and 'relations with patients', did not feature as factors once the analysis was undertaken. These dimensions were included in order to incorporate aspects of the three domains (Existence Needs, Relatedness Needs and Growth Needs) within Alderfer's ERG theory into the item pool. That 'Existence Needs' and 'Relatedness Needs' were relatively under-represented in the factorial structure (Table 1) is actually in keeping with Maslow's Hierarchy of Needs theory (Maslow, 1954) which hypothesizes that individuals have, in general, five needs in an ascending order: physiological, safety, social, esteem and self-actualisation – and as each need becomes substantially satisfied, the next need becomes dominant. For example, where the need to have a certain level of income is met, social contact from colleagues become more important, and where these are met, esteem needs are important; and where these are fulfilled, self-actualization (achieving one's potential) becomes an important driver.

Table 2. Mean factor scores for each factor comparing practitioners working under different models of financing (publicly funded (NHS) and either partly or completely privately financed)

<i>Factor</i>	<i>Mean (sd)</i>	<i>Mean (sd)</i>
	<i>Practitioners working with the public financed system (NHS)</i>	<i>Practitioners working either partly or fully within a privately financed system</i>
	<i>n=161</i>	<i>n=279</i>
<i>Factor 1</i>		
Restriction in being able to provide quality care	2.67 (0.65)	3.07 (0.76)
<i>Factor 2</i>		
Respect from being a dentist	3.70 (0.59)	3.69 (0.59)
<i>Factor 3</i>		
Control of work	3.57 (0.56)	3.75 (0.57)
<i>Factor 4</i>		
Running a dental practice	3.72 (0.53)	3.80 (0.60)
<i>Factor 5</i>		
Developing clinical skills	3.73 (0.60)	3.95 (0.58)
<i>Factor 6</i>		
Helping people	4.07 (0.51)	4.02 (0.51)

Table 3. Stepwise regression model analysis of practice characteristics and practitioner attributes for the six factors identified.

Factor 1: Restriction in being able to provide quality care			
<i>Demographic variable</i>	<i>Standardized Beta coefficient</i>	<i>t</i>	<i>Significance</i>
NHS/Private	0.274	5.86	P<0.001*
Years since qualified	0.132	2.63	P=0.009*
Principal/ associate or assistant dentist	-0.100	-1.99	P=0.047*
Adjusted R ² =0.082 (SE=0.71)			
Factor 2: Respect from being a dentist			
<i>Demographic variable</i>	<i>Standardized Beta coefficient</i>	<i>t</i>	<i>Significance</i>
Gender	-0.141	-2.93	P=0.004*
Adjusted R ² =0.018 (SE=0.57)			
Factor 3: Control of work			
<i>Demographic variable</i>	<i>Standardized Beta coefficient</i>	<i>t</i>	<i>Significance</i>
NHS/Private	0.149	3.10	P=0.002*
Adjusted R ² =0.020 (SE=0.56)			
Factor 4: Running a dental practice			
<i>Demographic variable</i>	<i>Standardized Beta coefficient</i>	<i>t</i>	<i>Significance</i>
Principal/ associate or assistant dentist	0.529	12.83	P<0.001*
Adjusted R ² =0.278 (SE=0.49)			
Factor 5: Developing clinical skills			
<i>Demographic variable</i>	<i>Standardized Beta coefficient</i>	<i>t</i>	<i>Significance</i>
NHS/Private	0.181	3.77	P<0.001*
Gender	-0.136	-2.83	P=0.005*
Adjusted R ² =0.041 (SE=0.58)			
Factor 6: Helping people			
<i>Demographic variable</i>	<i>Standardized Beta coefficient</i>	<i>t</i>	<i>Significance</i>
Gender	-0.126	-2.62	P=0.009*
Adjusted R ² =0.014 (SE=0.51)			

Table 4. Correlation of global job satisfaction score with the six factors identified

<i>Factor</i>	<i>Correlation with global job satisfaction score</i>	
Factor 1 Restriction in being able to provide quality care	R=0.60	p<0.001
Factor 2 Respect from being a dentist	R=0.136	p<0.001
Factor 3 Control of work	R=0.182	p<0.001
Factor 4 Running a dental practice	R=0.163	p<0.001
Factor 5 Developing clinical skills	R=0.203	p<0.001
Factor 6 Helping people	R=0.211	p<0.001

The factorial structure which emerged in the analysis is also in keeping with the conclusions drawn by Calnan et al (2000) who studied reasons for dentists' decision to practise in the public and private sectors in the UK. They identified the key issue as an ethical and altruistic concern amongst practitioners that the needs of their patients could not be adequately met within an NHS health system. Their qualitative work identified a typology of dentists as the 'altruistic' dentist, the 'business-orientated dentist' and the 'technically orientated' dentist, with income-related issues not found to be relevant, in spite of a perception by the public that dental practitioners are motivated by financial concerns (Allen et al, 1992). Calnan et al (2000) conclude that 'the appeal of the private sector for many dentists was less a reflection of the altruistic concerns for patient welfare than a concern to maintain or increase autonomy so that a sufficiently high level of technical care could be given to maintain job satisfaction', although it was difficult to separate concerns with dentists' professional interests and more altruistic concerns with their patients' welfare. The essence of the six factors within the measure of job satisfaction identified in the current study all appear to be related to aspects of the dentist as a member of a profession. Professionalism therefore appears to be an important perspective when attempting to understand how dentists' job satisfaction is constructed.

Previous measures of dentists' job satisfaction such as the Dentist Satisfaction Survey (Gilmour *et al.*, 2005; Shugars *et al.*, 1990; Wells and Winter, 1999) has contained items related to practitioners' income, but whilst this job facet was found to be moderately correlated ($r=0.49$) with global job satisfaction in California, it explained only a small amount of the variance in global job satisfaction. The most significant predictors of dental job satisfaction in that study on the other hand were found to be the intrinsic rewards of being a dentist such as 'respect' and the delivery of dental health services. When the same instrument was used in Kentucky (Wells and Winter, 1999), again the majority (42%) of the variance in global job satisfaction was explained by 'respect'.

In the current study, although 'respect' was found to

be one of the core job facets predicting job satisfaction amongst practitioners, the variable relating to the ability of the system to allow delivery of quality care for patients was found to be relatively more important. It appears that within the UK system, the relative importance of variables such as 'income' may have become 'background attitudes' and not key predictors of job satisfaction, when other issues such as the quality of care in relation to the delivery system have become pre-eminent. This has considerable implications for the development of government policy concerning UK dental services.

Differences apparent between practitioners working in the NHS and those working in private or mixed private/NHS practices in the present study, under-line the relative importance of the health care system on the job satisfaction of practitioners. Regression model analysis showed this factor to be a key predictor as to whether practitioners strongly identified with Factor 1 (restriction in being able to provide quality care), with those working under a publicly funded system (NHS), feeling more restricted. The scale also differentiated between NHS practitioners and those working in the private sector in how they felt about the 'control' of their work environment (Factor 3). The private medical (and dental) sector in the UK is relatively unregulated (Vayda, 1989), and thus working within a privately financed system would appear relatively more attractive to those who value having a high degree of control over their work. Again, this has significant implications for policy making.

Practitioners working within a private system were also found to place a higher value on developing their clinical skills, than those working completely within the NHS. The finding that NHS practitioners are more likely to feel restricted in being able to deliver a quality care may explain why practitioners highly motivated by clinical aspects of the job are also those choosing to undertake work in the private sector.

Whilst studies using the Dentist Satisfaction Survey (Gilmour *et al.*, 2005; Shugars *et al.*, 1990; Wells and Winter, 1999) found few practice characteristics associated with job satisfaction, with few age or gender related differences, the UK measure developed in this study has

identified several characteristics which were predictive of the core job facets identified. Females had a stronger attitude towards 'respect from being a dentist', 'developing clinical skills' and 'helping people'. A study of Dutch practitioners (Gorter *et al.*, 2006) which developed a measure of distinguishable categories of job resources (elements which restrict job demands) found that female dentists held a stronger attitude to males in relation to 'patient results', a key item being 'relieving patients' pain', which also featured within Factor 6 in the present study. Gorter *et al.* (2006) also found that females also had a stronger attitude towards 'patient care'.

The findings accord with general theory relating to gender differences in worker motivation. Western males are found to stress the development of the individual in their thinking, whereas females stress human relationships. This is demonstrated by studies where male workers score higher on 'Power', 'Financial rewards' and 'Self-reliance' whereas female scores in motivational profiles centre on 'Affiliation' (Shwalb *et al.*, 1992), a difference which appears to transcend cultural differences. That the scale developed in this study was able to detect differences in outlook between male and female practitioners in the UK, indicates that the tool is able to effectively discriminate group differences in attitudes towards core job constructs.

Gilmour *et al.* (2005), using the Dentist Satisfaction Scale (Shugars *et al.*, 1990) on a UK population, found a lower level of job satisfaction in dentists working in rural areas than in suburban or city locations, although numbers of rural dentists studied were relatively low. This appeared to be peculiar to the UK population, since this was not found in either Kentucky (Wells and Winter, 1999) or California (Shugars *et al.*, 1990) using the same survey instrument. Although initial investigations in the present study produced contrary findings: that rural UK dentists did in fact experience higher job satisfaction, with the difference apparent in relation to the job facet 'restriction in being able to provide quality care' (Factor 1); this variable fails to feature in the regression analysis, and thus indicates that differences in levels of job satisfaction in dentists practicing in rural as opposed to urban areas, may be accounted for by other factors such as whether the practice operates within an NHS, private/mixed NHS or private system.

Although the measure developed contained items in relation to three aspects: job satisfaction, job motivation and attitudes to current work situation, when factor analysis had been undertaken, no distinction was apparent between items worded in relation to job satisfaction, and items worded in relation to job motivation. However, all three types of statements featured in each of the six factors identified, which suggests that whereas all represent core constructs of jobs, cognitively speaking they are inter-related and they are therefore not psychologically distinct constructs. Further research is needed to explore this area more fully.

The measure of attitudes to core job constructs developed in this study identifies aspects of a dentists' job which are determinants of job satisfaction in the context of a UK dental practice setting. Does this mean that this measure does not have any relevance outside this context? Previous measures of job satisfaction have been developed

in the United States where healthcare is predominantly delivered in the private sector on a fee for service basis. What is different within the UK context, is the extent of cost containment pressures within the NHS sector and the ethical and altruistic concerns which may arise for dentists as professionals working in this type of system. There may be other oral health systems which, although the type of payment system may be different, pressures felt by dentists working within the system have more in common with practitioners in the UK. For example: in an international collaborative study looking at barriers to the treatment of childhood caries (Pine *et al.*, 2004), whilst 70% of dentists from US sites were very satisfied or satisfied with the dental care system when providing preventive services, 67% of dentists working in the UK and 78% of those surveyed working in Germany were dissatisfied or very dissatisfied in relation to the provision of preventive services. This study also identified the Czech Republic as a place where dentists experienced health system barriers to providing care similar to those reported by UK dentists.

The factorial structure described in this paper was developed using exploratory factor analysis which seeks to uncover the underlying structure in a relatively large set of variables. Further testing on different groups of dental practitioners is needed, with a confirmatory factor analysis to determine if the number of factors and the loadings of measured (indicator) variables on them conform to what is expected on the basis of the initial work. The results at this stage, although interpretable, should be regarded as an insight into the attitudes of this group of UK dental practitioners, with the measure itself to be developed through testing on other groups of dental practitioners.

In conclusion, this measure was designed to capture aspects (facets) of the job of a dental practitioner in order to help understand how their job satisfaction is constructed. Some of the facets identified (e.g. control) are unique to this measure, and reflect the relatively high importance of this aspect of the job of a dental practitioner, in the current environment. Certainly, issues related to autonomy, appear to be important determinants of job satisfaction for doctors (Lichenstein, 1998), particularly in relation to impacts on job satisfaction of health sector reforms (Walley, 2006). Overall the measure demonstrated acceptable psychometric properties, and may be a useful tool to monitor the impact of changes in dentistry such as alternative forms of practice organisation and financing (e.g. group practice, health maintenance organisations) and changes in systems of remuneration and governance.

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