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A survey of stress, burnout and well-being in UK dentists

Collin V,¹ Toon M,² O'Selmo E,¹ Reynolds L,² Whitehead P.¹

In Brief:

- High levels of self-reported stress and burnout were found in UK dentists.
- The top stressors reported by UK dentists relate to regulation, with fear of litigation reported as the most stressful aspect of practising dentistry.
- Future interventions should not solely focus on individual solutions such as stress management, but also look at global solutions such as changing aspects of the working environment.

Abstract

Introduction: It is well established that dentistry is a stressful profession, primarily due to the nature and working conditions in the dental surgery. With dramatic changes taking place in the profession in recent years it is important to establish the impact this has on dentists' well-being.

Aims: To determine the levels of stress and burnout in UK dentists and how this relates to well-being and identify the sources of work-related stress dentists report in different fields of practice

Materials and Method: An online survey comprising of validated measures examining stress, burnout and well-being in dentists was administered to British Dental Association (BDA) members and non-members.

Results: Valid responses were received from 2053 respondents. Dentists working in the UK exhibit high levels of stress and burnout and low well-being. General Dental Practitioners (GDPs) seem to be particularly affected. Issues relating to regulation and fear of litigation were deemed to be the most stressful aspects of being a dentist.

Conclusions: The findings from this study build upon existing research showing that dentistry is a stressful profession. The sources of this stress appear to have shifted over the years highlighting the changing landscape of dentistry. Interventions should focus on addressing these by making changes to the working conditions of dentists.

Introduction

Stress in dentistry is well-established.^{1, 2} Although stress or pressure in a job can have a positive influence by increasing motivation, if it exceeds an individual's ability to cope it can have a negative impact on mental health and well-being and potentially could lead to burnout. Key dimensions of burnout include psychological exhaustion or a loss of feeling and concern, a negative shift in response to others (depersonalisation), and reduced productivity and capability.³ Determining the prevalence of burnout among dentists is difficult to establish due to the variations of the measures used and different ways of categorising burnout. Recent estimates put the prevalence rate between 8%-36%.^{4, 5} Denton *et al.*⁵ in their study of UK dentists, found that 8 % exhibited scores in the severe range, whilst a further 18.5% were considered to be at risk of burnout. 42.2 % scored in the highest category for emotional exhaustion. Those working as General Dental Practitioners (GDPs), particularly with a high NHS commitment, displayed the highest levels of burnout.

Despite the body of evidence relating to high levels of occupational stress in dentists, relatively few studies have looked at psychological distress in dentists. Baldwin *et al.*⁶ reported that 30% of their

¹ British Dental Association, Policy and Research

² Cardiff University, Cardiff Business School

sample of young dentists was showing symptoms of psychological distress, as measured by the General Health Questionnaire (GHQ). Similarly, Myers and Myers² in their study looking at GDPs in the UK, reported that the prevalence of those scoring above the threshold and exhibiting minor psychiatric symptoms or 'caseness' measured by the GHQ was high at 32%. This is comparable with that typically found in research on medical doctors.⁷

Work undertaken by the British Dental Association (BDA)⁸ found that there is a 'well-being gap' between UK dentists and the general population, with dentists reporting lower well-being. Higher levels of occupational stress in dentists than typically seen in the general population were put forward to explain this well-being gap.

High levels of stress can have detrimental consequences for not only individuals in the case of decreased well-being, but also in terms of the profession. The Health and Safety Executive reports that stress accounted for 40% of all work-related ill health cases, and 49% of all working days lost in 2016/17.⁹ This equates to 12.5 million working days and is estimated to cost society 5.2 billion per year.¹⁰ Importantly for the dental profession is the implications this has to patient care. Previous research has shown that stress and burnout in dentists can lead to self-reported 'diminished professional standards.'¹¹

Different stressors have been put forward to account for occupational stress in UK dentists. Cooper *et al.*¹² revealed that emergency situations, unhappy and challenging patients, running behind schedule and time pressures were reported as the most stressful aspects of dentistry. To determine whether these had changed over time, Myers and Myers² utilised the same measure and found that running behind schedule (68%) coping with difficult patients (65%) working under constant time pressure (64%) medical emergencies (61%) and dissatisfied patients (52%) were the top stressors. Kay and Lowe¹ found that 75% of dentists cited patient demands as contributing the most to feelings of stress at work. This was followed by practice management/staff issues (56%), paperwork (non-clinical) (54%), fear of complaints/litigation (54%) and paperwork (clinical) (42%).

Major changes in the profession have taken place in the UK since much of this research was undertaken. For example, Myers and Myers conducted their research in 1999/2000,² and Kay and Lowe in 2005¹, prior to the introduction of the 2006 NHS general dental practice contract in England and Wales, rises in litigious consumer behaviour, less than inflation uplifts in NHS contract values and fee scales and various regulatory changes, including the introduction of the Care Quality Commission (CQC) in 2009, resulting in increased bureaucracy for dentists. These factors could conceivably result in increased occupational stress and reduced well-being. Previous research has shown the impact of some of these changes, for example a longitudinal study found that the 2006 NHS contract led to decreased job satisfaction in GDPs.¹³ It has been proposed that fear of litigation could lead to dentists practicing more 'defensive dentistry, whereby dentists avoid taking any risks, even if it is not in the patient's best interest.¹⁴ A recent qualitative study conducted by the BDA looking at mental health in UK dentists found that concerns about the GDC and how it regulates the profession were raised as contributing factors to poor mental health and burnout in the profession.¹⁵ This is consistent with findings from the GDC who in its 2013 registrants survey found that 61% of dentists cited that regulation by the GDC was 'too much'.¹⁶

This research therefore aims to provide a current account of well-being in UK dentists working in all fields of dentistry. This research also aims to offer an insight into the levels of stress and burnout experienced in the profession and establish whether these differ by field of practice. A further objective is to identify the key stressors, and whether these have changed over time.

Methodology

Sample: BDA dentist members and non-members were invited to take part in an online study looking at stress and burnout in UK dentists. 13,681 members and 9,225 non-members were directly emailed

and an open invitation was posted on social media, newsletters and promoted via professional networks. All respondents were given the opportunity to be entered into a prize draw for a £100 M&S gift card. Informed consent was obtained from all respondents.

Materials

A questionnaire was devised and constructed, comprising the following areas:

- Demographic questions (age, gender, ethnicity, marital status).
- Questions relating to working practices (if they were currently a dentist, year qualified, number of dentists working in the practice, number of clinical and non-clinical hours, main field of practice, NHS proportion and type of GDP if applicable).
- A number of validated questionnaires which assessed aspects of mental health, health and well-being are outlined below.
- Questions relating to alcohol use, suicide ideation, presenteeism and absenteeism.

Stress: A single-item measure of stress was used in this research, which has been utilised by the UK Health and Safety Executive (HSE) and a variety of large scale national surveys.¹⁷ Respondents were asked to indicate how stressed they were in relation to the question “*In general, how do you find your job?*” on a Likert-type scale (1-5) ranging from “not at all stressed” to “extremely stressed.” Sources of stress were also investigated using an adapted version of the Work Stress in Dentistry (WSID) measure developed by Cooper *et al.*¹² Questions relating to litigation and regulation were added, as inspired by Kay and Lowe.¹ This measure comprised 29-items, looking at different aspects of the working environment including work pressure (keeping to appointment schedules, too much work), work content (working with colleagues, equipment malfunction) contact with patients (anxious patients, dissatisfied patients), regulation (threat of complaints, red-tape/bureaucracy) and financial factors (earning enough money for lifestyle needs, seeing more patients than you want to for income reasons). Items were measured on the same scale as the single-item measure. Respondents were also given the option of selecting not applicable as some aspects may not be applicable to dentists working in particular fields. All Cronbach’s alphas for the subscales was 0.79- 0.89, indicating good internal consistency. In addition to the WSID, respondents were asked “*aside from those listed above, are there any other areas of your work that you feel are stressful?*” This open-ended question was used to find additional sources of stress.

Burnout: The Oldenburg Burnout Inventory (OLBI) was chosen to assess the level of dentists’ burnout in this study. Although the Maslach Burnout Inventory (MBI) is the most widely used burnout measure, it has been criticised on both a number of theoretical and methodological grounds.¹⁸⁻²⁰ Therefore, the Oldenburg Burnout Inventory was chosen which assesses burnout on two dimensions, exhaustion and disengagement. Eight questions cover the exhaustion dimension, which examines physical and cognitive aspects of exhaustion in addition to affective aspects as measured in the MBI, “After my work, I usually feel worn out and weary.” Eight questions examine the disengagement dimension, which covers the concept of depersonalisation and negative attitudes towards work and work engagement more generally, “Lately, I tend to think less at work and do my job almost mechanically.” The Cronbach’s alpha for disengagement was 0.81 and 0.86 for exhaustion.

Psychological Distress: The Core-General Population was used in this study to assess psychological distress. Derived from the Clinical Outcomes in Routine Evaluation Outcome Measure (CORE-OM), this 14 item measure has developed to assess psychological distress in a general non-clinical population.²¹ (The questionnaire includes items such as “I have felt able to cope when things go wrong,” “I have difficulty getting to sleep or staying asleep” and “I have achieved the things I wanted to.” Cronbach’s alpha for this measure was found to be 0.90.

Well-being: Personal well-being was measured using the ONS-4 measures.²² The questions asked relate to evaluative, eudemonic and the experience of personal well-being and items include ‘Overall, how satisfied are you with your life nowadays?’, ‘Overall to what extent do you feel the things you do in your life are worthwhile?’, ‘Overall, how happy did you feel yesterday?’ and ‘Overall how anxious did you feel yesterday?’ Questions are scored from 0-10, ‘not at all’ to ‘completely’.

Results

2,718 respondents (1,783 members and 935 non-members) engaged with the survey, yielding an approximate response rate of 13% for members. 665 respondents were removed as they were not currently working as dentists, not working in the UK or did not complete the full survey. This resulted in 2053 valid responses.

All data analysis was conducted using SPSS version 24 (IBM). Descriptive and inferential statistics are provided including t-tests and ANOVAs with post-hoc tests (Bonferroni adjusted) for multiple comparisons where necessary. Statistical significance was set with a p value of 0.05. Where figures are presented with error bars, these represent 95% confidence intervals around the mean.

Characteristics of the respondents are provided in table 1 and figures 1 and 2.

Table 1: Characteristics of respondents

Respondent Characteristics		N	Percentage (%)
Gender	Female	1139	55.6
	Male	905	44.1
	Prefer not to say	4	0.2
	Missing	5	0.2
Age	Under 25	54	2.6
	25-34	528	25.7
	35-44	533	26.0
	45-54	524	25.5
	55-64	357	17.4
	Over 65	49	2.4
	Prefer not to say	8	0.4
	Missing	0	0.0
Country	England	1570	76.5
	Northern Ireland	80	3.9
	Scotland	276	13.4
	Wales	122	5.9
	Missing	5	0.2
Main Field of Practice	General Dental Practice	1661	80.9
	Community Dental Services	192	9.4
	University dental teaching or research	46	2.2
	Hospital practice	93	4.5
	Another field of practice (<i>including Armed Forces, Public Health dentists</i>)	59	2.9
	Missing	2	0.1

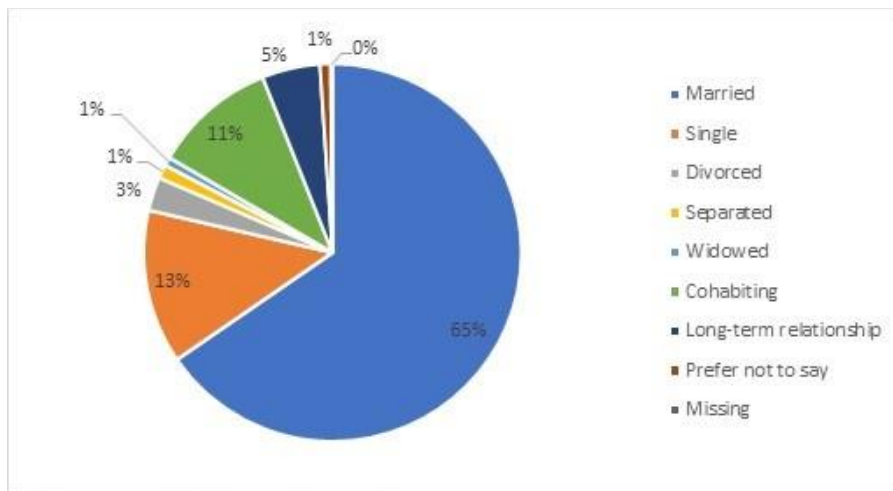


Figure 1: Marital status of respondents

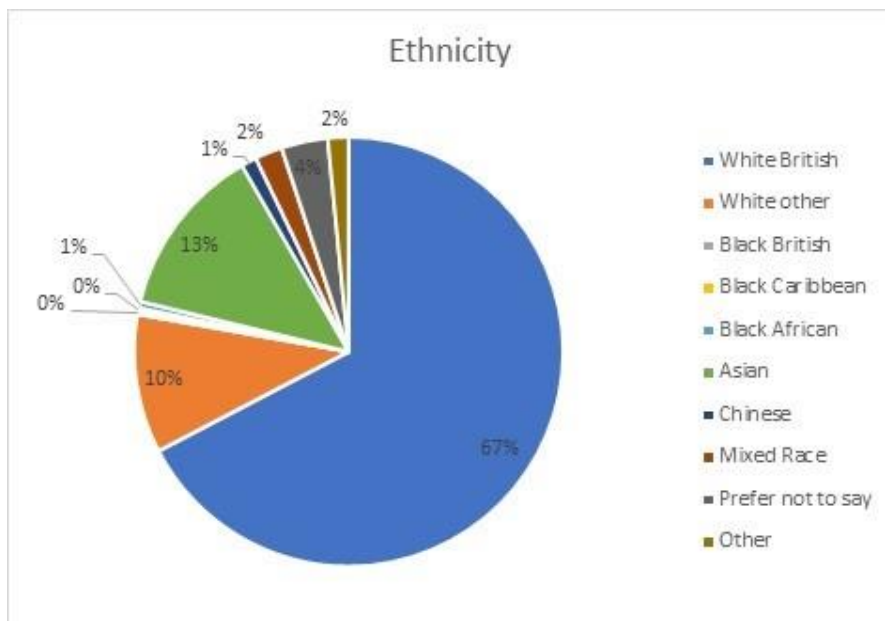


Figure 2: Ethnicity of respondents

Stress

54.9% of dentists reported currently experiencing high job stress (those describing their job as 'very' or 'extremely stressful'). When looked at by field of practice, GDPs reported the highest levels of stress. See figure 3.

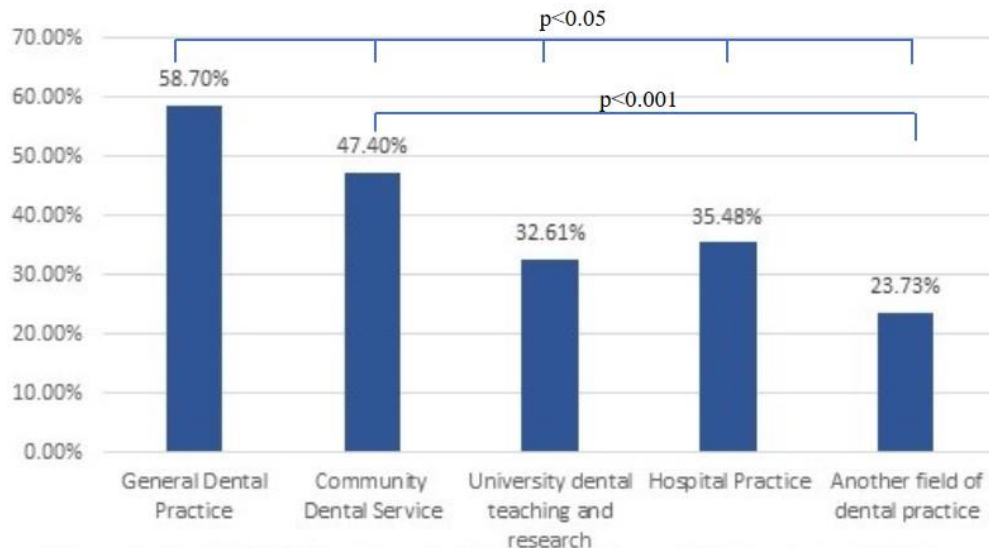


Figure 3: Levels of high occupational stress experienced by dentists working in different fields of practice

A One-way Analysis of Variance (ANOVA) was conducted to discover if there were significant differences in the reported levels of stress in the different fields of practice. It was revealed that the reported level of stress does vary according to a dentist's main field of practice, $F(4, 2046)=19.77$, $p<0.001$. Post-hoc tests found that GDPs reported significantly higher stress than all other types of dentists (all p 's ≤ 0.031). Community dentists scored significantly higher than dentists in another field of dental practice ($p<0.001$).

Ability to cope with stress

To determine whether the amount of stress experienced by dentists exceeded their ability to cope, dentists were asked to state the level of agreement to the following question "I can cope with the level of stress in my job." If respondents stated that they disagreed with this statement to some degree (strongly disagreed, disagreed and somewhat disagreed) this was taken as they could not cope with the stress in their job.

Worryingly, nearly half of the dentists in this sample (43.8%) said they could not cope with the level of stress in their job. This varied by field of practice, $F(4, 155.10)= 11.98$, $p<0.001$. General dental practitioners exhibited the highest scores, indicating they could not cope with the level of stress ($M=4.16$, $SD= 1.62$) followed by community dentists ($M=4.07$, $SD=1.54$) both were significantly higher than hospital dentists ($M=3.35$, $SD=1.42$) and dentists working in another field of practice ($M=3.17$, $SD=1.74$), all p 's ≤ 0.04 .

Sources of stress

Looking at the results from the WSID stressors relating to regulation scored the highest, followed by work pressure, contact with patients, financial factors and finally work content.

The percentage of dentists who rated the individual items as very or extremely stressful was calculated and the top ten stressors are outlined in table 2.

Table 2: Top ten stressors reported by dentists

Stressor	Percentage (%)
Threat of complaints/litigation	79.0
Dissatisfied patients	75.1
Risk of making a mistake	74.9
Red tape/bureaucracy	74.5
Concern about the GDC	72.8
NHS targets	72.4
Running behind schedule	64.9
NHS work	63.2
Working quickly to see as many patients as possible	62.9
Difficult patients	61.2

Respondents also elaborated on these sources of stress in the open-ended question. Out of the 2053 respondents, 830 commented on additional sources of stress (40.4%). A thematic analysis was undertaken²³ using NVIVO software version 10 (QSR International). Firstly, the open-ended questions were initially coded and then subsequently categorised and grouped/ordered into themes. After a process of revision and refinement, these were then checked and validated independently by another researcher (E O'S). The themes are outlined in Table 3 with selected extracts provided to demonstrate both evidence for and prevalence of the theme in the data.

Table 3: Themes generated from the open question of additional sources of stress for dentists

Theme	Description of theme	Selected extracts
Governance	This theme covered a broad range of stressors relating to organisational and regulatory aspects, some of which were already covered in the survey.	<i>'mindless bureaucracy,' 'paperwork to keep within red tape regulations'</i> <i>'NHS lack of funding and direction of health care generally is very bleak'</i> <i>'threat of clawback' 'unrealistic UDA targets' being made to feel a failure for not hitting UDAs' Confusing and burdensome regulations'</i> <i>'constant changes in regulation' preparing for CQC visits' 'tendering'</i>
Perceived persecution	This theme relates to how dentists reported feelings of being persecuted by the regulator, the government as well as by patients and the media	<i>'the feeling that the GDC are working against dentists and not supporting them'</i> <i>'the system is designed to put the clinician at fault at all times'. 'The smallest complaint could end my career' constant GDC fear'</i> <i>'writing up notes to defend against litigation'</i> <i>'Negative media publicity giving false ideas of dentists being rich' 'everybody hates dentists' 'general public's perception of dentists'</i>

Lack of support	Feelings of being unsupported were commonly reported. The source of this support varied by the type of dentist, for example in general practice, practice owners typically expressed a lack of support from regulatory bodies and the government, whereas for associates this came from practice management. These sentiments were also shared by dentists working in the CDS and hospitals.	<i>'lack of help and understanding from bodies such as the GDC, CQC, BDA and professional standards' 'feeling taken advantage of by the NHS team.', 'lack of help from management, a like it or lump it attitude' 'lack of support from managers who do not take the time to understand the needs of special care patients' 'lack of support and training when starting my first hospital post'</i>
Professional constraints	Issues relating to restrictions due to the nature of the job, including a perceived lack of control, working arrangements and isolation were labelled professional constraints. These differed depending on position and sector.	<i>'not trusted to make a decision and get on with it' 'not much freedom to make changes in the best interest of the patient and dentist when working as an associate' 'pressure to publish and get grants in academia' 'lack of control over working arrangements' 'Lack of earnings if taking a holiday'</i>
Shifting culture	Some dentists expressed concern about a move towards a more corporate mentality, which was perceived as placing profits above patient care. Not all of these sentiments were made by associates working in corporates, suggesting that this mentality is not necessarily associated with or confined to the larger corporates.	<i>'pressure of profitability' 'coping with pressure put on by corporate company....not being able to feel you are giving the patients the best treatment' 'balancing my responsibilities as a professional with the demands of my employer' 'being asked to work in a compromising way.'</i>
Staff Issues	Issues related to staff were not included in the WSID, and therefore were mentioned frequently in the open question. The theme covered managing staff, dealing with other members of the dental team, interpersonal conflict and inexperienced staff.	<i>'emotional toil of managing people' 'responsibility to employees' 'politics that exist in the dental team making communication near on impossible,' 'aggressive practice management...felt I had no support when bullied' 'lots of discrimination' 'nurses provided are not efficient, and you end up not only taking care of the patient but the nurse too'</i>

Burnout

To be considered as experiencing burnout, respondents had to score ≥ 2.25 on exhaustion and ≥ 2.10 on disengagement. These cut-off points have been used in previous research.⁴ The levels of self-reported burnout according to field of practice are outlined in figure 4.

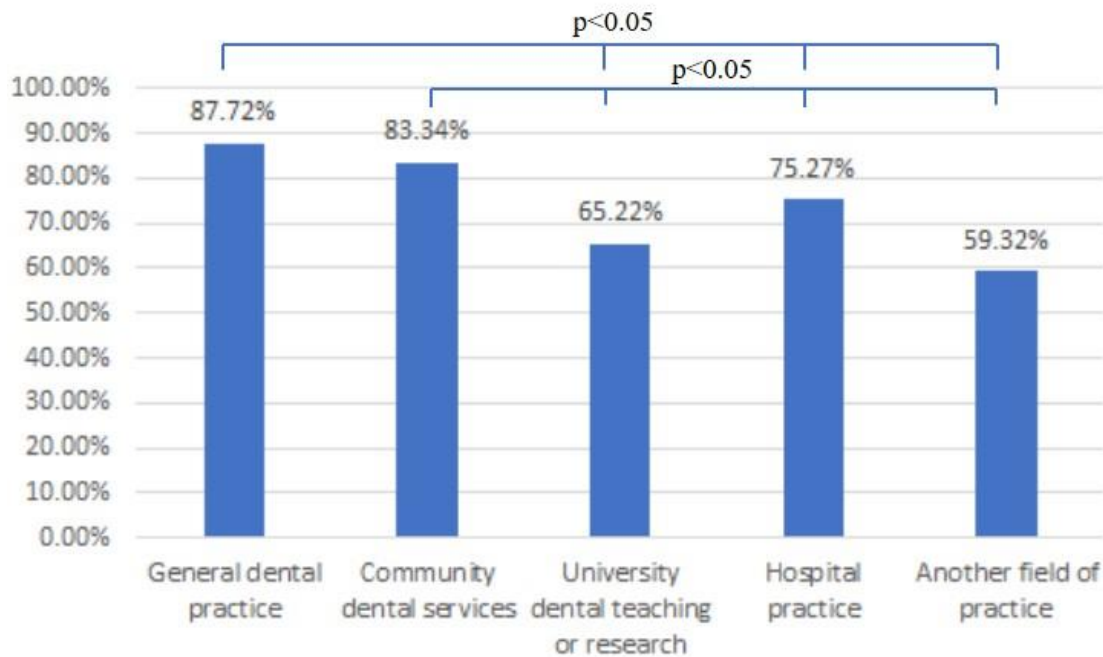


Figure 4: Dentists' level of burnout by field of practice

As can be seen in figure 4, GDPs exhibited the highest levels of burnout, although all dentists had much higher levels than those reported in the literature. A one-way analysis of variance revealed a significant difference between the groups on their mean scores of burnout $F(4, 2045)=23.17, p<0.001$. Post-hoc tests showed that GDPs and community dentists showed significantly higher levels of burnout than dental academics, hospital dentists, and those in another field of practice (all p 's ≤ 0.02). There were no other significant differences between the fields of practice (all p 's > 0.05).

Psychological distress

Prior to calculating the mean scores selected items were reverse coded according to instructions. A clinical cut-off was utilised as recommended by Sinclair et al,²⁴ of 1.49 for males and 1.63 for females. Respondents who scored equal to or above these thresholds were deemed to be experiencing psychological distress.

The results show a high level of psychological distress in the sample, with nearly 68% showing levels of psychological distress. Although this varied by field of practice, they all exceed the levels shown by Myers and Myers in their research on GDPs who found levels of 'caseness' on the GHQ to be 32%.² Although caution needs to be applied when comparing these results as different measures were used, it is still informative that these results also exceed that reported by other professions including veterinary surgeons (34%)²⁵ and GPs (17-52%).⁷

Mean levels of psychological distress were shown to be significantly different according to the field of practice a dentist worked in $F(4, 2043)=10.00, p<0.001$, see figure 5. Post-hoc tests showed that GDPs scored significantly higher on psychological distress than dental academics ($p=0.002$), hospital dentists ($p=0.019$) and dentists in another field of practice ($p<0.001$). Community dentists were also found to score significantly higher than dental academics, and those in another field of practice, ($p=0.005$).

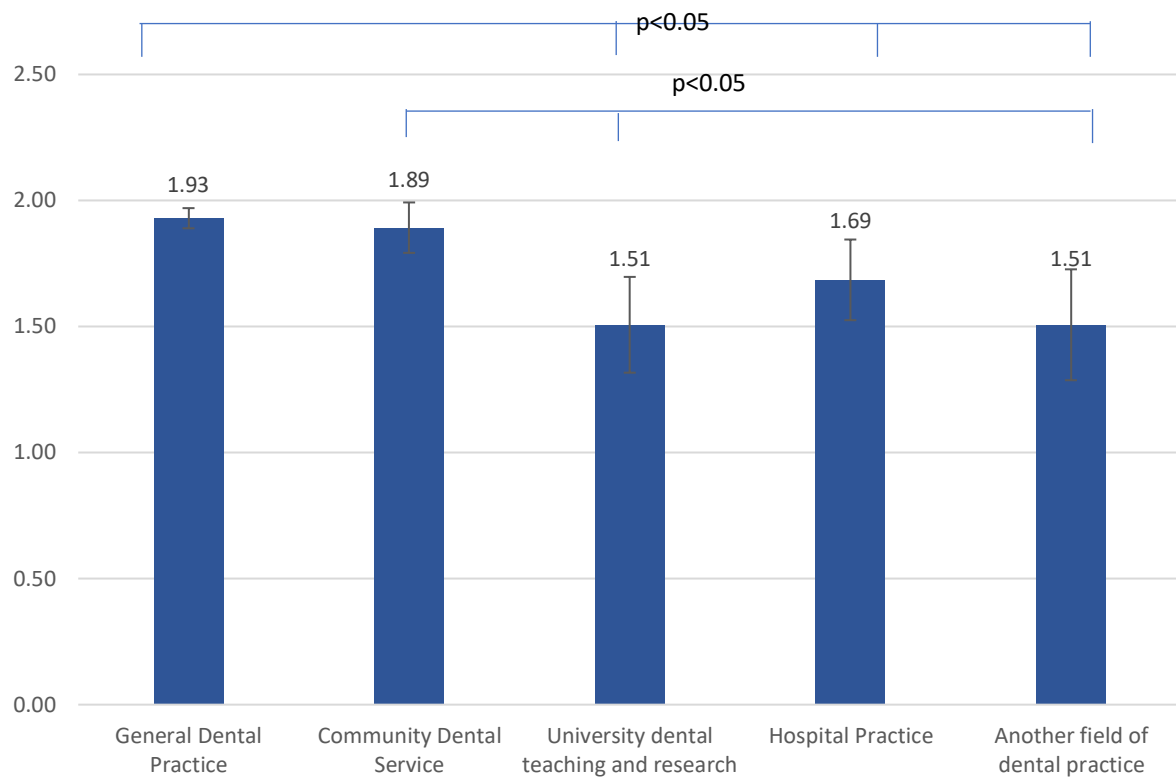


Figure 5: Mean scores of psychological distress reported by dentists working in different fields of practice

ONS Well-being measures

Dentists scored lower on life satisfaction, life worthwhileness, happiness and scored higher on anxiety than the general population²⁶ (see figure 6).

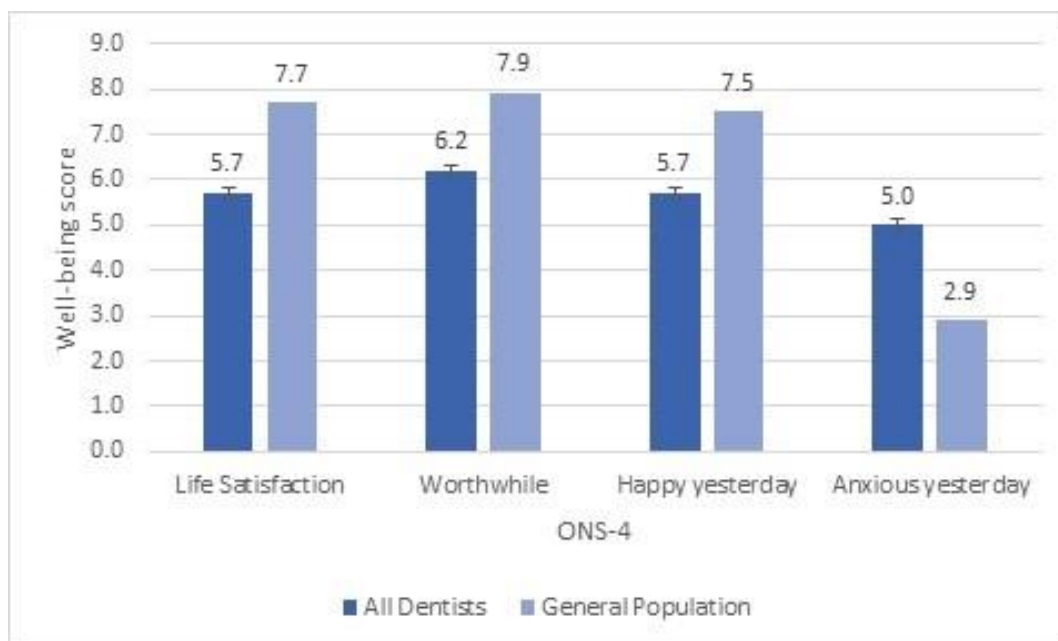


Figure 6: Mean well-being scores for all dentists and the general population

Error bars for the dentists represent 95% confidence intervals. This information was not provided for the general population.

One-way ANOVAs found that there were significant differences in mean scores between main fields of practice for all four measures. Post-hoc tests, revealed that GDPs exhibited lower scores than academic dentists, and those in another field of practice for satisfaction with life (all p 's ≤ 0.02), lower scores than hospital dentists and dentists in another field of practice on seeing their lives as worthwhile, (all p 's ≤ 0.05) and lower scores than those in another field of practice for happiness ($p=0.013$) For anxiety both GDPs and community dentists scored significantly higher than dental academics and dentists in another field of practice (all p 's ≤ 0.021)

Occupational stress and well-being

To determine whether occupational stress had an impact on well-being scores, dentists who reported feeling very stressed or extremely stressed by their job were compared with those who found their jobs moderately, mildly or not at all stressful. The results showed that those who had high occupational stress ($n=1128$) scored significantly lower than those with lower stress ($n=925$) on life satisfaction, $t(2050.99)=22.09$, $p<0.001$, seeing their lives as worthwhile, $t(2046.78)=18.13$, $p<0.001$, happiness, $t(2044.87)=18.44$, $p<0.001$, and higher levels of anxiety, $t(2051)=18.82$, $p<0.001$. Mean scores are presented in figure 7.

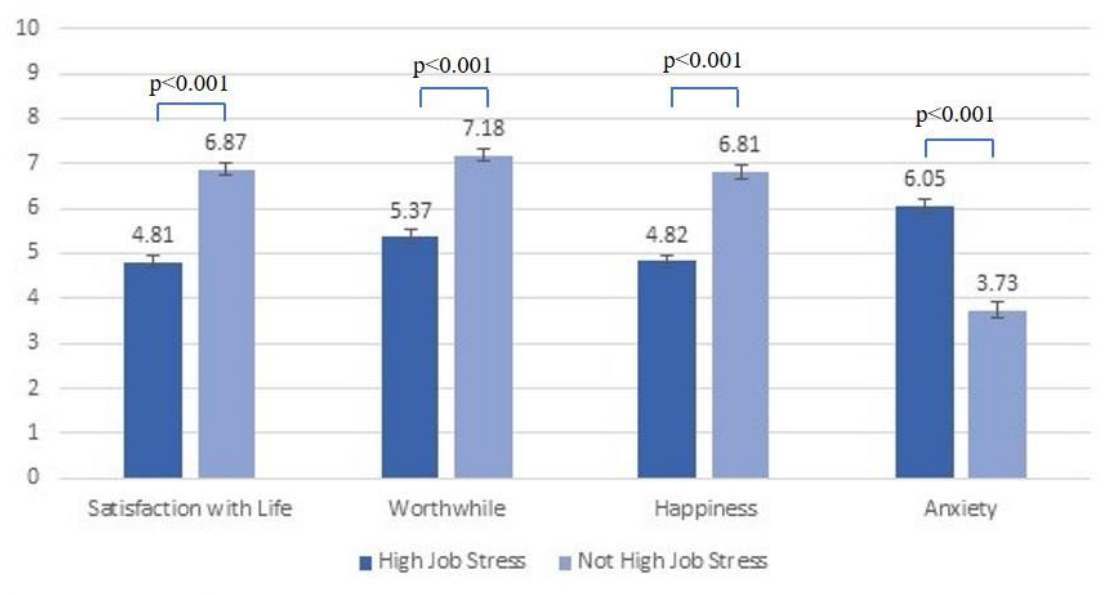


Figure 7: Dentists' well-being scores by occupational stress

Burnout and well-being

The difference between the scores on the well-being measures was striking between those who were categorised as having burnout ($n=1757$) with those who were not ($n=295$), with those not categorised as experiencing burnout faring better on all well-being measures, (t, 473.245= 19.66, $p < 0.001$ - life satisfaction, t, 504.45=15.627, $p < 0.001$, life worthwhile, t, 445.99, 14.98, $p < 0.001$ happiness, t, 2050= 14.85, $p < 0.001$, anxiety, respectively). Means are presented in figure 8.

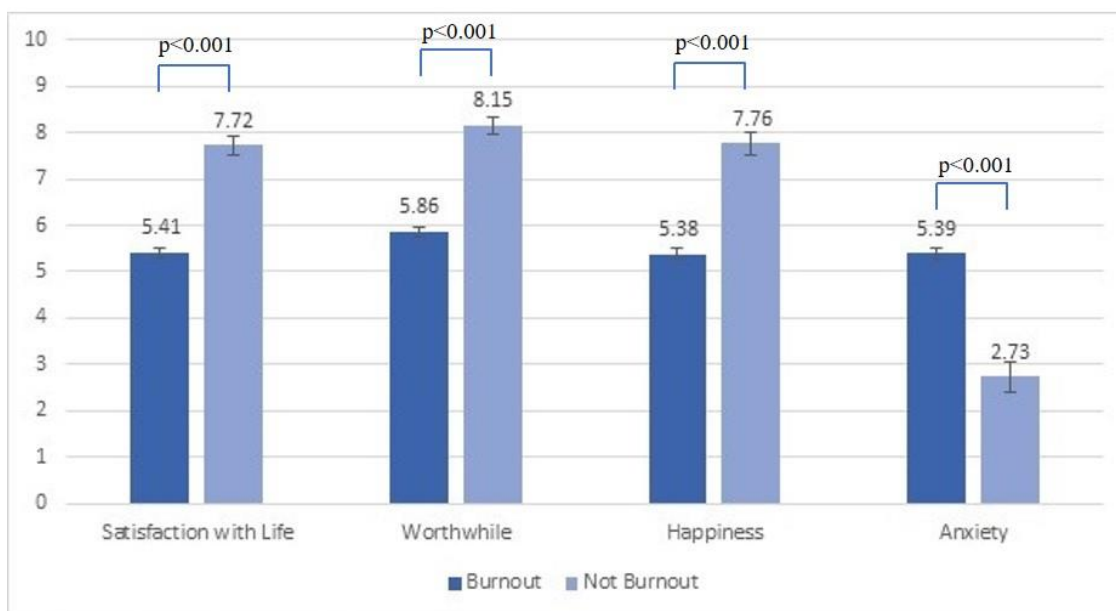


Figure 8: Dentists' well-being scores by burnout

Alcohol consumption

For all respondents, 85.6% had drunk alcohol in the last 12 months (13.3% had not and 1.1% preferred not to say). Of those, the reported frequencies of consumption are presented in figure 9.

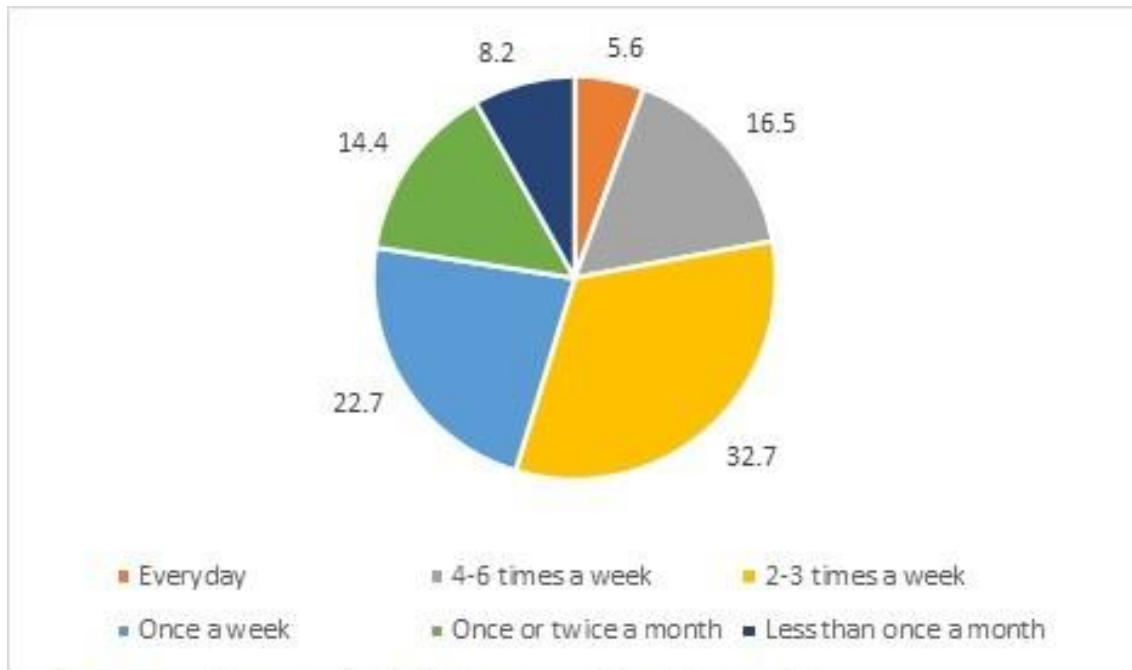


Figure 9: Self-reported alcohol consumption of respondents

22.1% reported drinking 4 times or more every week, with 5.6% drinking every day. This is compared to 9.6% of people (aged 16 and over) in Great Britain in 2016 who report drinking on 5 or more days a week.²⁷ However, the number of dentists drinking everyday was less than that of Kay and Scarrott who found that 8% of dentists drank every day.²⁸ This difference could reflect a downward trend in drinking behaviour in the UK since 1997.²⁷ Although we did not directly measure the number of units consumed, if the typical drink contains between two to three units, then conceivably some of this 22.1% would exceed the recommended 14 units a week.

Stress and Alcohol

To examine whether there was a link between alcohol consumption and stress, as previous research has inferred,^{2, 3} respondents who were categorised as experiencing high and not high stress in their jobs were compared on their self-reported frequency of alcohol consumption. The results showed no significant difference between the groups, in fact those who reported lower levels of stress in their jobs reported slightly higher alcohol consumption, although this difference was minimal ($M=3.45$, $SD=1.36$ -not high stress and $M= 3.52$, $SD=1.23$ for high stress, $p=0.26$). There was also no significant difference in self-reported frequency of drinking between those who were categorised as experiencing higher levels of burnout ($M=3.49$, $SD=1.31$ and those who were not ($M=3.46$, $SD=1.24$, $p=0.81$).

Suicidal thoughts

17.6% of all respondents had seriously thought about committing suicide (72.4% No, 9.9% preferred not to say). This figure, although on first glance, appears high, covers the whole life span, and is

comparable to a recent survey which found that 20.6% of the general population had reported suicidal thoughts at one point in their life.²⁹

On further investigation however, we found that dentists deviate from the general population and display much higher levels of suicidal thought, of those who had said they had thought about suicide, 57.7% had thought about committing suicide in the last 12 months (42.3% No). This equates to nearly 10% of respondents, and is higher than Kay and Lowe who found that 3.5% of dentists had thought about suicide in the last 12 months.¹ This is also higher than the general population figure of 5.4% reported for 16-74-year olds living in England,²⁹ and slightly higher than the global figure of 9.2%.³⁰ Although most people who have thoughts about suicide do not go on to die by suicide,³¹ the fact that so many practising dentists are thinking about it is deeply troubling. This has implications for practitioners' well-being, as suicidal thought has been linked with depression,³¹ anxiety,³² burnout,³³ and mental illness more generally.³⁴

Stress, burnout, psychological distress and suicidal thoughts

There was significant association between high job stress, burnout, psychological distress and thinking about suicide in the last 12 months. Those categorised as experiencing high job stress, psychological distress and burnout were more likely to report that they had thought about suicide in the last 12 months ($\chi^2=34.84$, $df=2$, $p<0.001$, $\phi=.031$, $\chi^2=30.57$, $df=2$, $p<0.001$, $\phi=0.29$, $\chi^2=28.27$, $df=2$, $p<0.001$, $\phi=0.28$ respectively)

General health

Those who reported that they were 'somewhat, very or extremely satisfied' with their level of general health were collapsed into one group (good health) and those reporting a neutral response or any level of dissatisfaction 'somewhat' 'very' or 'extremely dissatisfied' as not good health to be able to make comparisons with the wider literature.

When all dentists were included, 55.6% reported they were in good health. When those who reported high job stress ($M=3.84$, $SD=1.54$) were compared to those who reported moderate to no job stress ($M=4.96$, $SD=1.29$), significant differences were found in general health scores (t , 2047.94 =17.89, $p<0.001$). Significant differences were also found between those scoring above the threshold for burnout ($M=4.17$, $SD=1.50$) and those who did not ($M=5.41$, $SD=1.32$, t , 432.71=14.58, $p<0.001$). In both cases those in the high stress and burnout group rated their satisfaction with their general health less favourably. This is consistent with previous research linking physical to mental health in dentists.^{11, 8}

Discussion

The results from this comprehensive survey add to a growing body of research revealing the stressful nature of dentistry.^{1, 2} Stress and burnout were shown to be associated with decreased well-being, general health and suicidal thoughts, supporting previous research demonstrating that stress can have detrimental consequences on mental health.³⁵ However, the results did not support a link between alcohol consumption and stress or burnout, as previous research has shown.^{2, 11}

The high levels of self-reported stress, burnout and psychological distress found in this study are a serious concern to the profession. Although GPs seem to be particularly affected, this research shows that all fields of dentistry exhibit elevated levels compared to the general population,^{36, 29} other professions including veterinary surgeons,²⁵ GPs⁷ or dentists in the same field of practice working in other countries.^{37, 4} Therefore, highlighting that this is a universal problem for dentists working in the UK.

This study reported higher levels of stress, burnout and psychological distress than typically seen in previous studies. It is proposed that these high levels are a reflection of how the landscape of dentistry has changed since the previous research was undertaken. When comparing the sources of stress to

previous findings^{1,2} there are some noticeable differences. Although running behind schedule was cited in the top 10 stressors it was no longer the primary concern of the dentists in our sample. Instead fears about litigation, dissatisfied patients and regulatory issues featured prominently. This reflects the increased regulation faced by the profession and rising negligence claims against dentists.

Another theme that arose from the qualitative data was the feeling of persecution. It is apparent that many dentists do not feel that their profession is valued and is perceived negatively by the media and the general population. Previous research has shown that dentists' job satisfaction is influenced by their perceptions of working in a prestigious and respected job, with those that feel disrespected by patients and the public scoring lower job satisfaction.³⁵ The finding that dentists scored lower than the general population on seeing their lives as worthwhile could stem from this. Employment can act as a source of meaning and purpose in one's life.³⁸ However, if you are in a job where you feel you are not appreciated or valued, it may call into question the belief that what you are doing is worthwhile.

The current and alarmingly high rates of burnout, stress and psychological distress reported by dentists in this study indicate a chronic systematic problem, which fundamentally lies in the working environment, not at the individual level. Many of the interventions to date have been targeted at changing individuals, rather than trying to change the system. Although individual interventions such as stress management and mindfulness programmes have been shown to be effective at increasing well-being, and reducing levels of burnout; when organisational or structural changes have been implemented (for example improving work schedules, increased mentoring or support, practice delivery changes) these are typically more effective and have more long-lasting results.^{39,40} Working conditions vary across dentist types, as reflected in our results. GDPs represent the largest group of the dentist types and further investigation into the environmental stressors in GDP subgroups such as practice owners, NHS only and private-only dentists would be beneficial. Such analysis would provide greater insight into the effect of differing working conditions on a particular area of stress.

Limitations

It is important that the limitations of the research are considered. Due to the sensitive nature of the survey, it was paramount to ensure the anonymity of respondents. As such, tailored reminders and a paper follow-up could not be conducted which led to a reduced response rate. Although in itself, a low response rate is not indicative of response bias, it does increase the possibility that responders differed from the non-responders in some way.⁴¹ For example, there could be differences in demographic variables leading to certain groups being over or underrepresented in the sample. A further limitation is that there could be a selection bias, previous research into burnout has suggested that those who volunteer to take part in such research are "intrinsically inclined to experience burnout or exaggerate their burnout systems" (Singh *et al*, pg. 29).⁴² However, other research has suggested that those experiencing high levels of stress, burnout or other mental health concerns would be less inclined to take part, so it could be an underrepresentation.^{43,44} Potential non-response bias was investigated by comparing early responders to late responders (who are more likely to resemble non-responders)⁴⁵ on key outcome variables such as stress and burnout, and no significant differences were found (all p 's >0.05).

Efforts were also made to determine how representative the sample was to the population of interest. When compared to the number of registered dentists with the General Dental Council,⁴⁶ our sample comprised of more females (55.6% compared to 49%) and dentists from Scotland and Wales were slightly overrepresented in our sample (13.4% compared to 10.0% and 6.1% compared to 4.0% respectively). Differences in ethnicity were also found, a larger proportion of respondents in the survey were White British (57% compared to 36%). BDA members and non-members were also compared on key outcome variables and no significant differences were revealed.

One possible reason our results found higher scores of burnout could be due to the differences in the measures used. However, previous research has demonstrated the convergent validity of the measures, meaning that they are measuring the same construct.⁴⁷ It may also be that the thresholds

used to classify respondents are different, however the criteria to define the constructs are based on validated methods. For example, the thresholds for calculating burnout using the OLBI are based on MBI scores of those clinically diagnosed with burnout.⁴

Despite these limitations, this research represents a large-scale study using validated measures offering a comprehensive insight into stress and well-being of the UK dental population.

Conclusion

Overall this study shows that dentistry is a stressful profession, with nearly 44% of respondents indicating that this stress exceeded their ability to cope. Regulation in dentistry and fear of litigation were rated to be the most stressful aspects of being a dentist, highlighting how the landscape of dentistry in recent years has changed. The high levels of stress, burnout and psychological distress were associated with decreased personal well-being, poorer health and suicidal thoughts. Reducing regulation and improving dentists' working conditions could have a major benefit in reducing stress and burnout among dentists.

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