An empirical study of how emotion dysregulation and social cognition relate to occupational burnout in dentistry

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Key points

- Suggests emotion dysregulation and personal distress contribute to the risk of occupational burnout in dental professionals.
- Burnout tendency in undergraduate dental students highlights the need for early educational and/or psychological intervention.
- Examines why effective management of emotional state in clinical practice may reduce risk of practitioner burnout and improve patient outcomes.

Abstract

Introduction Dentists are frequently exposed to occupational stressors, including emotionally tense interactions with patients who are experiencing pain, anxiety and fear. Unsurprisingly, dentists are also a group that experience particularly high levels of occupational burnout. The present study provides the first empirical test of whether occupational burnout is higher, and general wellbeing is lower, for dental practitioners and students who have greater difficulties managing their own emotions (emotion dysregulation) and detecting and interpreting social cues from others (social cognitive difficulties).

Materials and methods Ninety-six dental practitioners and 54 dental students completed validated measures of emotion regulation, social cognitive function, occupational burnout and wellbeing.

Results Consistent with broader literature, rates of burnout were significantly higher in both dental practitioners and students, relative to normative standards. Importantly, the results also identified significant associations between rates of burnout with both emotion dysregulation, as well as one of the measures of social cognitive function: the empathic disposition to experience discomfort in response to the distress of others (personal distress). Ratings of emotion dysregulation and personal distress were also significantly higher for dental students relative to practitioners.

Conclusion These data highlight the importance of being able to effectively manage difficult emotions in the dental practice.

Introduction

The phenomenon of occupational burnout was originally identified by Freudenberger,[1] who noted how excessive workplace demands could lead to an individual becoming exhausted, and ultimately inoperative. Burnout has more recently been defined as 'a state of physical, emotional and mental exhaustion that results from long-term involvement in work situations that are emotionally demanding'.[2] A particularly important feature of this definition is that it specifically attributes burnout to the stress of coping with emotional demands. Considering the amount of emotional stress that dentists routinely face in clinical practice,[3,4] it is not surprising that a high rate of burnout has been identified among dental practitioners. Indeed, one recent study estimated that more than a quarter of dental staff are at 'severe risk' of burnout.[5] In their recent systematic review of this literature, Singh *et al.* concluded that 'there is scope to identify and prevent burnout by introducing screening and intervention programmes at undergraduate level'.[6]

While the role of emotional stress in predicting burnout is well established, the specific types of regulatory strategies used by dental practitioners to deal with stress, and how these relate to burnout, remain poorly delineated. Emotion regulation refers to the set of processes by which one's inner experience and outward expression of emotion are regulated. Emotion dysregulation (the inappropriate, excessive or extreme application of available and otherwise adaptive emotion regulation processes) has been linked to poorer mental wellbeing broadly, and greater psychopathology.[7] To date, only three studies have assessed either emotion regulation or emotion dysregulation in dental practitioners.[8,9,10] All three of these studies used qualitative research methods to assess the same small group of dentists (N = 20), and in none of these studies was the relationship between the use of different emotion regulation strategies and burnout specifically assessed. The development of effective interventions first requires identifying which specific types of regulatory strategies are related to burnout.

The first aim of the present study was therefore to extend the current understanding of the types of emotion regulation strategies used by dental practitioners, and directly test how the use of different strategies relate to burnout.

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This will be achieved using well validated, quantitative research methods to objectively index a range of different emotion regulation strategies. In addition, because prior research shows that younger age and enrolment in a clinical degree programme are among the most significant risk factors for burnout,[6] the current study also included a cohort of undergraduate dental students, and tested the prediction that maladaptive emotion regulation strategies will be more common in this cohort.

The second aim of this study was to provide the first empirical test of whether social cognitive difficulties might also be relevant to understanding vulnerability to burnout in these two groups. 'Social cognition' refers to our ability to make sense of, and interpret, social cues in our environment. A large literature in other populations now shows that, because better social cognitive function allows more contextually sensitive and socially appropriate responding, it is linked to many important indices of mental health and wellbeing.[11,12] However, no study to date has tested whether social cognition is also relevant to understanding dentistry-related burnout. This omission seems surprising given, as noted, dentists are frequently exposed to patients experiencing pain, anxiety and fear. The appropriate detection of these social cues would seem to be critical to effectively managing and dealing with patients' needs, defusing emotionally charged situations, and minimising stress.

Aims

The aim of the present study was therefore to use validated social cognitive measures to test the prediction that dental practitioners and students who exhibit poorer social cognitive function will also be those who report higher levels of occupational burnout and poorer wellbeing more broadly.

Materials and methods

Participants

Two distinct cohorts were recruited for this study: registered dental practitioners in Australia, and undergraduate dental students at the University of Queensland. Individuals in both groups were invited to participate via an electronic survey that was sent to them via email.

Dental practitioners working in both private and public practice were targeted. Private dental practitioners were contacted via email, after being selected randomly from the Australian Dental Association online directory. Public dentists were recruited via an email sent out to all Queensland Health practitioners. In total, 96 dental practitioners completed all components of the survey, 55.1% were male. On average, these dentists had been working for 16.29 years (SD = 13.69 years), worked 4.36 days a week (SD = 1.09 days), with a mean of 35.62 clinical hours worked per week (SD = 12.83 hours). On average, dental practitioners saw 11.55 patients per day (SD = 6.62 patients). The majority of dentists (41.2%) worked solely in the private sector, with one third of these dentists owning the practice. Of the remainder, 29.9% of dentists worked in the public sector and 28.9% worked in a combination of both.

Undergraduate students were invited to participate via an email and were provided information about the study during lectures. In total, 54 undergraduate dental students participated, 54.2% were male.

Ethical approval was provided by the School of Dentistry Research Ethics Committee at the University of Queensland.

Data collection

The electronic survey was hosted online via the Qualtrics platform, and in addition to obtaining background information about the participants, presented the following, validated assessments of occupational burnout, emotion regulation and social cognitive function.

Burnout and quality of life

To index burnout, the Professional Quality of Life scale (ProQOL) and the Copenhagen Burnout Inventory (CBI) were used.[13,14] The ProQOL consists of three ten-question subscales, one of which provides a measure of compassion satisfaction, and two of which index compassion fatigue. Higher scores for compassion satisfaction indicate greater satisfaction with one's ability to provide care to others. An example item from this scale is 'I get satisfaction from being able to help people'. Compassion fatigue assesses negative emotions one can experience when providing care to patients that have suffered trauma or extreme stress, and is indexed via two separate scales: a burnout scale and a secondary traumatic stress scale. Examples of items from these two scales are 'I feel worn out because of my work' and 'I think that I might have been affected by the traumatic stress of those I help'. The CBI also consists of three subscales, used to identify the life domain(s) that are affected by burnout: the personal domain (for example, 'How often do you feel worn out?'); the work domain (for example, 'Do you feel burnt out because of your work?'); and the patient domain (for example, 'Does it drain your energy to work with clients'). Both measures have been extensively validated.[14,15] The Satisfaction with Life Scale (SWLS) was also used to obtain a broad indicator of overall wellbeing.[16] The SWLS is an extensively validated five-item instrument used to evaluate subjective wellbeing. An example item is 'In most ways, my life is close to my ideal'.

Emotion regulation

The 36-item Difficulties in Emotion Regulation Scale (DERS) was used to index the use of specific maladaptive emotion regulation strategies.[17] The measure provides scores for six distinct types of emotion regulation difficulty: 1) non-acceptance of emotional responses (such as 'When I'm upset, I feel guilty for feeling that way'); 2) ability to engage in goal-directed behaviour (goals, for example, 'When I'm upset, I have difficulty getting work done'); 3) impulse control (for instance, 'When I'm upset, I feel out of control'); 4) emotional awareness (such as 'I pay attention to how I feel'); 5) emotion regulation strategies ('When I'm upset, I believe that there is nothing I can do to make myself feel better'); and 6) emotional clarity ('I am confused about how I feel'). As with the other measures, the DERS is extensively validated. Higher scores are indicative of poorer emotion regulation.

Social cognitive function

To index social cognitive function, three seven-item sub scales from the Interpersonal Reactivity Inventory (IRI) were used.[18] These were the perspective-taking subscale, which assesses the tendency to spontaneously adopt the perspective of others. For example, 'I sometimes try to understand my friends better by imagining how things look from their perspective'. There is also the empathic concern subscale, which assesses other-oriented feelings of concern for others (for instance, 'I am often quite touched by things that I see happen'), and the personal distress subscale, which assesses self-oriented feelings of personal anxiety and unease in response to the distress of others (for example, 'I tend to lose control during emergencies'). Social cognition was also assessed using the Reading

the Mind in the Eyes test (RMET).[19] The RMET requires participants to select which of four words best describes the thoughts or feelings expressed in 36 pictures of eyes. Both the IRI and the RMET have been extensively validated.[11]

Results

Burnout and life satisfaction relative to normative data

Table 1 provides descriptive data on burnout and wellbeing among dental practitioners and dental students, as well as normative data to provide a point of comparison. Norms for the ProQOL were taken from the ProQOL manual, produced from a data bank of 1,289 cases created from multiple studies. Norms for the SWLS are reported as Ms and SDs on the test author's personal webpage. Norms for both of these measures are reported in Table 1 simply as an 'average' range. According to these normative standards, it can be seen in Table 1 that for both groups there were no major deviations for the ProQOL-CS, ProQOL-B and SWLS (that is, dental practitioners and students scored in the 'average' range for these subscales), but that both groups scored in the 'low' range for secondary traumatic stress on the ProQOL-CS. Norms for the CBI were taken from the project on burnout, motivation and job satisfaction, which comprises 1,917 individuals working in human service professions.

Independent sample t-tests indicated that both dental practitioners and students reported greater burnout as indexed by all three subscales of the CBI (all ps <.05, two-tailed); effect sizes ranged from small (Cohen's d = 0.31 for the comparison involving students on the CBI-personal subscale) to moderate (Cohen's d = 0.66 for the dental practitioners on the CBI-client subscale). Dental practitioners and students did not differ from one another on any of these measures (all ps >.05).

Table 1 Burnout and broader life satisfaction in dental students and dental practitioners relative to published normative data

Measure	Dental practitioners		Dental students		Normative data
	M	SD	M	SD	
Burnout					
ProQOL-CS	38.6	5.17	37.8	6.36	23–41
ProQOL-B	23.2	5.52	22.3	5.29	23–41
ProQOL-STS	20.9	6.30	20.5	6.49	23–41
CBI-personal	42.8	20.28	40.8	16.69	35.7 (16.5)
CBI-work	42.9	21.0	40.0	16.84	33.0 (17.7)
CBI-client	41.8	19.06	35.8	17.71	29.9 (17.9)
SWLS	24.3	6.60	24.7	6.21	20–24

ProQOL refers to Professional Quality of Life. CS refers to compassion satisfaction, B refers to burnout, STS refers to secondary traumatic stress

Table 2 Correlations between measures of emotion dysregulation and social cognitive function with wellbeing and burnout

	DERS	RMET	IRI-EC	IRI-PT	IRI-PD
Dental practitioners					
ProQOL-CS	-0.53**	-0.06	0.01	-0.08	-0.31**
PRoQOL-B	0.64**	0.12	-0.02	-0.03	0.31**
ProQOL-STS	0.66**	0.06	0.26*	0.05	0.45**
CBI-personal	0.64**	0.06	0.22*	-0.05	0.36**
CBI-work	0.60**	0.15	0.16	-0.04	0.36**
CBI-client	0.55**	0.12	0.12	0.00	0.41**
SWLS	-0.61**	-0.06	-0.04	0.01	-0.21*
Dental students					
ProQOL-CS	-0.43**	0.14	0.30*	0.14	-0.40**
PRoQOL-B	0.62**	-0.21	-0.38*	-0.34*	0.38*
ProQOL-STS	0.62**	-0.29	0.15	-0.07	0.26
CBI-personal	0.60**	0.12	0.04	-0.20	0.44**
CBI-work	0.58**	-0.06	-0.02	-0.26	0.48**
CBI-client	0.39**	-0.04	-0.23	-0.37*	0.29
SWLS	-0.38**	0.31*	0.18	0.13	-0.46**

*p <0.05; **p <0.01
ProQOL refers to Professional Quality of Life. CS refers to compassion satisfaction, B refers to burnout, STS refers to secondary traumatic stress. CBI refers to Copenhagen Burnout Inventory. SWLS refers to Satisfaction with Life Scale. DERS refers to Difficulties in Emotion Regulation Scale, RMET refers to the Reading the Mind in the Eyes Test, IRI refers to Interpersonal Reactivity Inventory. EC refers to empathic concern. PT refers to perspective-taking. PD refers to personal distress

Relationship between emotion regulation and social cognition with burnout

Pearson product-moment correlations between scores on the measures of burnout and wellbeing with emotion dysregulation and social cognitive function are reported in Table 2, separately for practitioners and students. It can be seen that, for both groups, the same pattern of relationships is evident. Specifically, scores on the measure of emotion dysregulation (the DERS) were significantly and substantially related to every burnout and wellbeing measure (all correlations were large in magnitude as defined by Cohen's criteria, that is, all rs ≥.50).[20] Two of these correlations are visually shown in Figure 1, for illustrative purposes. In addition, higher levels of personal distress were associated with lower levels of wellbeing and greater levels of burnout, with most of these associations moderate in magnitude, that is, rs ≥.30.

As noted earlier, a further important issue in this literature is which specific types of regulatory strategies are important to understanding occupational burnout. Consequently, Table 3 reports correlations between scores on the measures of burnout and wellbeing separately

for each of the six DERS subscales. These data indicate that difficulties with five of the six types of strategies (all strategies with the exception of emotional awareness) are consistently significantly related to burnout and wellbeing. The majority of these associations are moderate or large in magnitude.

Social cognitive function and emotion dysregulation

Finally, independent sample t-tests were conducted to establish whether the dental practitioners and students differed on the measures of social cognition and emotion dysregulation. These data (alongside descriptive statistics and effect sizes) are reported in Table 4. It can be seen that the two groups did not differ with respect to their self-rated empathic concern, perspective-taking, or in their ability to objectively identify social cues as indexed by the RMET. However, students reported significantly greater emotion dysregulation relative to practitioners as indexed by the DERS, as well as greater personal distress when observing another's negative experience (both ps <.05). The corresponding effect sizes were small and moderate, respectively.[20]

Discussion

The importance of dentistry-related burnout is now well established in the broader literature, with a recent search in PubMed of the terms 'burnout AND dentists' identifying more than 160 unique research articles on this topic (December 2018). It is therefore critical to gain a clearer and more nuanced understanding of the factors that predict why so many dental practitioners experience burnout, so that interventions can be designed to help identify and prevent burnout occurring. As noted by Singh *et al.* 'Developing prevention and coping strategies for burnout may reduce the risk and the prevalence of burnout. Left untreated, burnout could have disastrous long-term effects such as depression and suicide'.[6]

Consistent with most other research on this topic, dental practitioners reported significantly elevated levels of burnout relative to established norms. Specifically, although broader wellbeing and professional quality of life did not differ from normative standards, practitioners reported significantly greater burnout across all three life domains indexed by the CBI (personal, work and patient). These same findings were identified for the dental students,

Fig 1 Example correlations with emotion dysregulation (Difficulties in Emotion Regulation Scale) in dental practitioners: a) positive correlation with the Copenhagen Burnout Inventory (work-related domain); b) negative correlation with the Satisfaction With Life Scale. Pearson correlation coefficient (r) and statistical significance (p) are shown

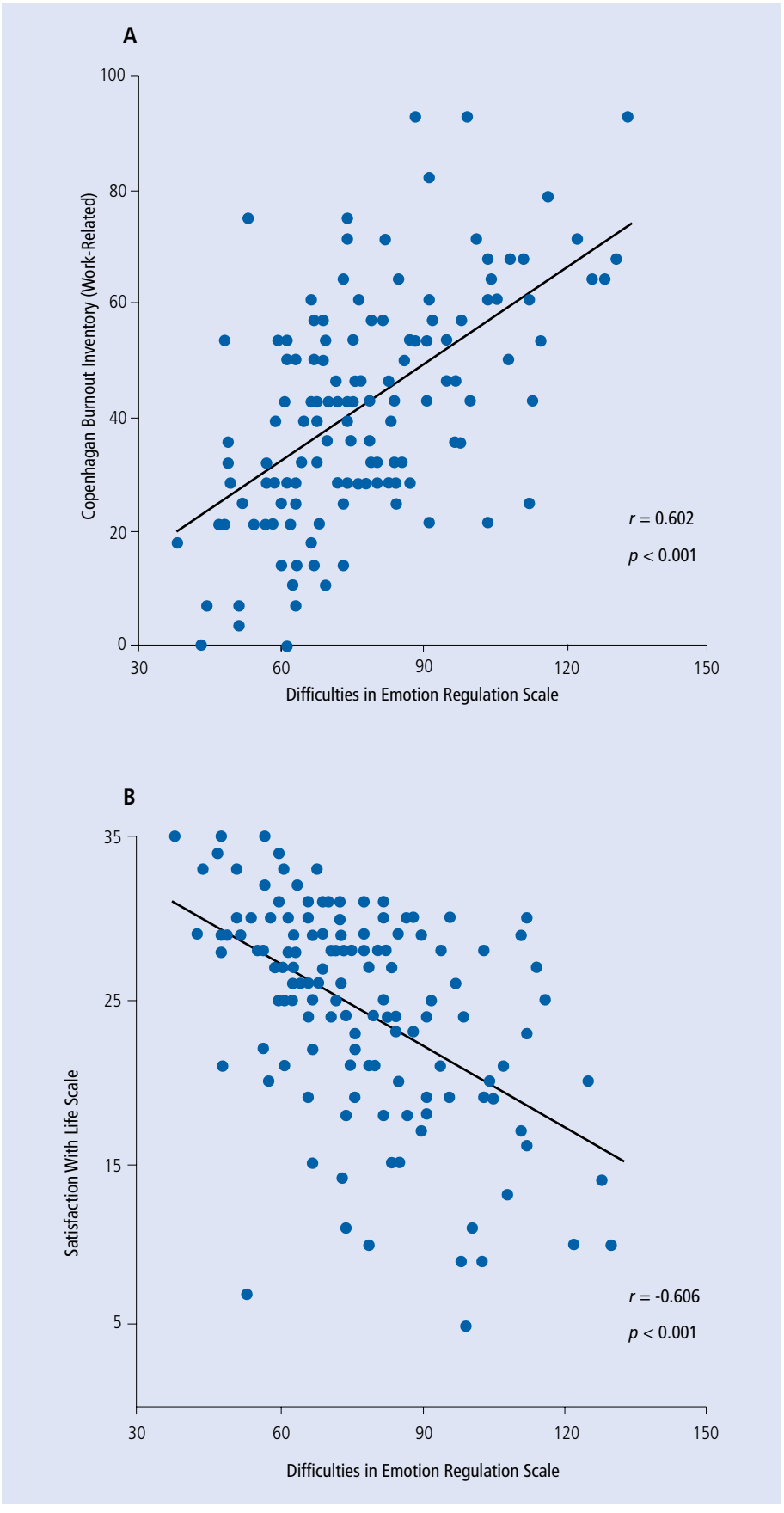

Table 3 Correlations between specific facets of emotion dysregulation, as indexed by the Difficulties with Emotion Regulation sub-scales, with wellbeing and burnout

	Non-acceptance	Goals	Impulse	Strategies	Awareness	Clarity
Dental practitioners						
ProQOL-CS	-0.273**	-0.261*	-0.339**	-0.381**	-0.354**	-0.386**
PRoQOL-B	0.487**	0.347**	0.465**	0.570**	0.318**	0.493**
ProQOL-STS	0.471**	0.585**	0.573**	0.647**	-0.019	0.359**
CBI-personal	0.493**	0.425**	0.527**	0.632**	0.043	0.319**
CBI-work	0.416**	0.454**	0.524**	0.600**	0.063	0.307**
CBI-client	0.306**	0.429**	0.411**	0.488**	0.171	0.339**
SWLS	-0.410**	-0.260*	-0.447**	-0.597**	-0.181	-0.465**
Dental students						
ProQOL-CS	-0.262	-0.206	-0.277	-0.495**	-0.187	-0.379**
PRoQOL-B	0.465**	0.398**	0.397**	0.658**	0.178	0.457**
ProQOL-STS	0.507**	0.482**	0.429**	0.582**	-0.020	0.529**
CBI-personal	0.613**	0.576**	0.440**	0.493**	-0.088	0.430**
CBI-work	0.491**	0.551**	0.465**	0.432**	0.056	0.384**
CBI-client	0.292*	0.308*	0.264	0.302*	0.145	0.399**
SWLS	-0.223	-0.253	-0.155	-0.463**	-0.213	-0.319*

*p <0.05; **p <0.01
ProQOL refers to Professional Quality of Life. CS refers to compassion satisfaction, B refers to burnout, STS refers to secondary traumatic stress. Norms for the ProQOL were taken from the ProQOL manual. CBI refers to Copenhagen Burnout Inventory. SWLS refers to Satisfaction with Life Scale

Table 4 Descriptive and inferential statistics comparing dental students and practitioners on the measures of emotion dysregulation and social cognition

Measure	Dental practitioners		Dental students		Inferential statistics			Cohen's d
	M	SD	M	SD	t	df	p	
DERS	74.6	19.40	82.2	20.76	2.20	144	.029*	0.38
RMET	27.2	4.07	26.8	3.75	0.72	150	.470	0.13
IRI-EC	27.1	4.64	26.5	4.05	0.81	144	.418	0.14
IRI-PT	25.4	4.51	26.1	4.18	0.93	144	.352	0.16
IRI-PD	16.1	4.75	19.0	4.83	3.42	144	.001**	0.60

*p <0.05; **p <0.01
DERS refers to Difficulties in Emotion Regulation Scale, RMET refers to the Reading the Mind in the Eyes Test, IRI refers to Interpersonal Reactivity Inventory. EC refers to empathic concern. PT refers to perspective-taking. PD refers to personal distress

adding to a growing literature which suggests that burnout can develop before entering the workforce[21] and reinforcing the importance of developing evidence-based interventions for use at undergraduate training level. Indeed, early intervention is critical given that burnout has the potential to develop into a chronic condition,[22] with obvious and direct implications not only for the wellbeing of the practitioner, but also for their ability to provide good dental care.

The identification of significant and substantial correlations between emotional dysregulation with burnout and wellbeing for both dental practitioners and students has potentially important implications. These data indicate that in both of these cohorts, individuals who have better emotion regulation also have a reduced susceptibility to burnout. Although there has been relatively little prior research exploring the relationship between emotion dysregulation and burnout in dentists specifically, studies on emotional regulation in other occupations have identified similar results.[23,24,25]

Furthermore, as noted earlier, emotional demands have been attributed particular importance in the aetiology of burnout,[2] and emotion regulation training interventions have proven very effective in other emotionally demanding occupations, such as critical care nursing.[26] To the authors' knowledge, only one study to date has evaluated an intervention for primary care dentists that included a focus on emotion regulation strategies. In the study by Chapman *et al.*,[27] multiple skills were encouraged, tackling a wide range of coping mechanisms, and dental practitioners reported clinically and statistically significant decreases in negative effect, emotional exhaustion and enhanced personal achievement following this intervention, relative to baseline. Although conclusions from the Chapman *et al.*[27] study are limited by the absence of any control group, their data, together with the results from the current study, provide encouraging preliminary support for the value of training packages focused on enhancing emotion regulation strategies in the field of dentistry. Because the current study indicates that it is poor emotion regulation more broadly (five of the six DERS subscales were consistently significantly related to the indices of wellbeing

and burnout), and not maladaptive use of any one particular strategy, future training packages of this type should endeavour to target a wide range of maladaptive emotion regulation strategies. At the same time too, a related goal should be to foster the conscious development of more positive, adaptive coping strategies, by encouraging conscious students and practitioners to actively develop strategies to deal with stress and conflict more effectively.

With respect to social cognitive function, no significant associations were identified with self-rated empathic concern or perspective-taking, or the ability to objectively identify social cues as indexed by the RMET. These results were surprising, given that the ability to accurately detect social cues is presumably critical to effectively manage and deal with patients' needs, defuse emotionally charged situations and minimise stress. Indeed, research involving other occupational groups has shown that emotion recognition can be a more important determinant of occupational stress than emotion regulation, as it allows social interactions to be managed with less effort.[28] The current findings suggest that these relationships may not generalise to the field of dentistry, or possibly manifest in a different way.

Consistent with this latter possibility, the fourth measure of social cognition, personal distress, was significantly correlated with the measures of burnout and broader wellbeing. These relationships were moderate in magnitude and evident in both groups. Personal distress is a measure of dispositional empathy and broadly refers to the tendency to experience distress and discomfort in response to extreme distress in others (an example item is 'Being in a tense emotional situation scares me'). The current results indicate that dental practitioners and students who are more prone to experiencing greater personal distress are also those who are more likely to experience burnout and poorer wellbeing. Moreover, these data not only have implications for the wellbeing of the dental practitioner, but also for the care they provide their patients. This is because level of dental anxiety in clinical situations has been shown to affect clinical decision-making.[29]

Again, potentially speaking to the importance of early intervention and training recommendations at the undergraduate level, dental students reported significantly elevated scores on both the measures found to be related to burnout in the present study (emotion dysregulation and personal distress). However, because of the cross-sectional nature of this study, it is not clear whether the lower levels of emotion dysregulation and personal distress in the dental practitioners reflects their greater life experience and maturity, or instead selective attrition, whereby the individuals who score highest on these measures at undergraduate level are those most likely to discontinue their careers in dentistry. Further work on this topic using longitudinal research methods is needed. Finally, it is also important to acknowledge that although steps were taken to recruit a representative cohort in both groups (such as by targeting both private and public dental practitioners), ultimately there is always the potential issue of self-selection. Further work is therefore needed to cross-validate the current findings, and to ensure they are robust across different cohorts of dental practitioners and students.

Conclusion

The current study identified significantly elevated levels of burnout among both dental practitioners and students, and these were substantially and consistently related to both emotion dysregulation and a specific aspect of empathic responding to others (personal distress). These data highlight the importance of being able to effectively manage difficult emotions in the dental practice and have particular implications for training recommendations at the undergraduate level.

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