Self-perceived stressors of Bachelor of Oral Health students and implications for student support

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Abstract

Introduction: Despite a greater recent interest in students' stressors in the dentistry learning environment, there is little research on oral health therapy students' stressors. This study aimed to identify self-perceived stressors of Bachelor of Oral Health (BOH) students in order to determine whether the learning support provided to them at the University of Otago, Faculty of Dentistry is meeting their needs and to make recommendations for future support strategies.

Methods: All Bachelor of Oral Health students (n = 135) were invited to complete an online modified version of the Dental Environmental Stress Survey in 2016. The questionnaire included 31 items on potential sources of stress, which students were asked to rate on a 5-point Likert-type scale ranging from 1 "not at all stressful" to 5 "extremely stressful".

Results: About half of the respondents were first-year students, with the remainder equally distributed between second- and third-year students. The items "fear of being unable to catch up if behind" and "examinations and assessments" scored the highest, indicating that the students perceived these to be their greatest stressors. Although there were some individual high-scoring self-perceived personal stressors for students, overall, academic requirements were the highest scoring stressors, regardless of year group. Clinical environment stressors were rated highest for students in the second year, corresponding to when students start seeing patients.

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Conclusion: This study identified several self-perceived stressors for BOH students. The findings suggest that students require extra support at different stages of the program, for example, when they begin to treat patients. Future research should be directed at investigating what types of support programs would be of most benefit to students.

Keywords: oral health students; self-perceived stressors; student support.

Introduction

Students enrolled in health professional programs around the world experience various forms of study-related stress (Elani et al., 2014; Enns, Eldridge, Montgomery, & Gonzalez, 2018; Jacob et al., 2012; Jacob, Itzchak, & Raz, 2013). Dental education is no exception and is commonly reported as being one of the most demanding and challenging fields of study (Gambetta-Tessini, Marino, Morgan, & Anderson, 2013; Muirhead & Locker, 2008; Polychronopolou & Divaris, 2009). There are few studies examining stress among diverse student populations, but when compared to other health professional students, dental students have higher stress levels than medical students and similar stress levels to other health science students (Elani et al., 2014; Polychronopolou & Divaris, 2009). While dental students must obtain education in both the theoretical and clinical components of dental care, they are also responsible for the care of their patients, many of whom require irreversible dental treatment; this may contribute to considerable stress (Alzahem, van der Molen, Alaujan, Schmidt, & Zamakhshary, 2011; Elani et al., 2014). According to Palmer and Cooper (2013), stress will occur when an event or situation exceeds a person's perceived ability to cope with pressure. While some pressure or stress may push students to work at their optimum (Al-Omari, 2005; Gordon et al., 2016), too much may put them at greater risk of psychological problems such as anxiety, depression or burnout. Excessive or prolonged stress can also lead to poor academic performance, physical health problems, or substance abuse (Alzahem et al., 2011; Elani et al., 2014).

Stress among dental students has received much research attention over the last few decades. Most of these studies have been conducted using the Dental Environment Stress (DES) questionnaire, with findings suggesting that sources of stress (stressors) mostly included academic workload, examinations and grades, clinical requirements, personal factors and the living and learning environment (Alzahem et al., 2011; Elani et al., 2014). There has been little research focused on the dental hygiene, dental therapy or oral health therapy learning environments. However, research carried out on groups of dental and oral hygiene students in Canada and Africa, and dental hygiene/dental therapy (DHDT) students in the United Kingdom (UK) and Australia, found that stressors in their learning environments were similar to those generally reported by dental students and included clinical and study workload factors (Gordon et al., 2016; Harris, Wilson, Hughes, Knevel, & Radford, 2018). Furthermore, research in the UK compared DHDT students with dental students and found similar patterns in sources of stress between these two groups of students, and that these were, once again, comparable to international findings. Examinations, fear of failing and completing

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clinical requirements were all reported as being highly stressful (Harris, Wilson, Holmes, & Radford, 2017a).

While more closely aligned with dentistry in terms of curriculum and clinical environment, dental therapy, dental hygiene and oral health therapy are also considered allied health professions, and, as such, student experiences may be compared between these professions. While caution should be taken when making comparisons because different tools are used to assess stress in these groups, such as the Undergraduate Sources of Stress (USOS) questionnaire and the Perceived Stress Scale-10 (PSS), as opposed to the DES, research carried out with occupational health, physiotherapy and nursing and midwifery students found that the highest perceived stressors for these students also included academic and clinical factors (Alzayyat & Al-Gamal, 2014; Everly, Poff, Lamport, Hamant, & Alvey, 1994; Jacob et al., 2012; Labrague et al., 2017; McCarthy et al., 2018; Tucker, Jones, Mandy, & Gupta, 2006; Walsh, Feeney, Hussey, & Donnellan, 2010). Another study, by Jacob et al. (2013), which compared the stressors between students enrolled in physical therapy, nutrition sciences and communication disorders programs, noted that students in all three professions experienced similar levels of stress, with the main source also being academic.

At the Faculty of Dentistry, University of Otago, Bachelor of Oral Health (BOH), classes are smaller than dentistry classes, and students appear to know one another well, possibly providing support for each other when required. In addition to this, most of the BOH staff have either had many years' experience supporting students or are University of Otago BOH graduates and can readily relate to students' experiences. As a result, BOH students may experience less stress than students in other courses. This study used a modification of the Dental Environmental Stress (DES) questionnaire to survey Bachelor of Oral Health (BOH) students at the Faculty of Dentistry, University of Otago, in order to identify their self-perceived stressors and make recommendations for future strategies to reduce stress. Differences in responses between each BOH year group were also examined to aid in identifying where extra support for students might be appropriate.

Methods

At the beginning of the 2016 academic year, following Māori consultation and ethical approval from the University of Otago Human Ethics Committee (D/16/041 135), Otago University BOH students enrolled across all three year levels were invited to participate in this cross-sectional study. Students were advised that participation was voluntary and responses would be anonymous. Baseline demographic data were collected using an online self-report survey. A link to the survey on the online research platform "Qualtrics" was emailed to students, and consent was given by entering the survey. All questions were derived from questionnaires used in previous research. The questionnaire included the modified version of the Dental Environmental Stress (DES) questionnaire, which had previously been piloted at Otago University in 2015 (Garde, Adam, & Tawse-

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Smith, 2015). A copy of the questionnaire and its modification from the original source (Polychronopoulou & Divaris, 2005) can be obtanied from the first author.

The modified DES instrument consisted of 31 items divided into four subscales relating to potential sources of stress in students' settings. The items and subscales are detailed in Table 1 and comprised: academic settings (AS), clinical settings (CS), environmental settings (ES) and personal settings (PS). Students were asked to rate each of the 31 items on a 5-point Likert-type scale depicting severity: "not at all stressful" (1), "somewhat stressful" (2), "quite stressful" (3), "very stressful" (4) and "extremely stressful" (5), with 1 being least severe and 5 being most severe. Demographic information was also collected, and a free-text comment box was inserted to allow respondents to elaborate further on their answers.

Data were analysed using IBM SPSS Statistics software (version 24). Descriptive statistics were produced, and bivariate analyses used chi-square tests to examine the statistical significance of categorical variables where appropriate. ANOVA was used to test the statistical significance of apparent differences in means between groups. A p value < 0.05 was deemed statistically significant. Cronbach's alpha was used to determine the internal consistency of data for subscales, and checked by omitting each item in turn and scrutinising the alpha value for remaining items. An alpha of above 0.7 was considered acceptable. Item scores were summed to produce subscale scores for the academic, clinical and patient responsibility, environmental and personal subscales. Confirmatory factor analysis was used to verify the underlying factor structure (data available on request). Qualitative data from the free-text comment boxes were collated and categorised.

Table 1
Mean Item Scores by Year of Study (SD)

Subscale	Item	BOH1	BOH2	BOH3	All years combined
Academic	Amount of assigned classwork	3.0 (1.1)	2.7 (0.8)	2.6 (0.9)	2.8 (1.0)
	Difficulty of assigned classwork	2.8 (0.9)	3.1 (0.8)	2.3 (1.0)	2.7 (1.0)
	Competition for grades	2.8 (1.3)	2.9 (1.3)	2 .0(0.9)	2.6 (1.2)
	Examinations and assessments	3.8 (0.9)	3.4 (0.9)	3.1 (0.9)	3.5 (1.0)
	Completing academic course requirements	3.0 (1.0)	2.7 (1.0)	2.5 (1.1)	2.8 (1.1)
	Fear of failing course or year	3.4 (1.4)	2.7 (1.3)	2.7 (1.4)	3.1 (1.4)
	Lack of time to complete assigned schoolwork	3.0 (1.3)	3.2 (1.0)	2.7 (1.0)	3.0 (1.2)
	Fear of being unable to catch up if behind	3.8 (1.0)	3.5 (1.1)	2.9 (1.0)	3.5 (1.1)
Clinical	Completing clinical course requirements	2.5 (1.0)	3.0 (0.9)	2.5 (1.1)	2.6 (1.0)
	Difficulty learning clinical procedures	2.6 (0.9)	2.9 (0.7)	2.5 (0.9)	2.6 (0.9)
	Difficulty learning precision manual skills required in preclinical and laboratory work	2.4 (1.0)	2.6 (0.9)	2.3 (1.2)	2.4 (1.0)
	General clinical environment	1.7 (0.8)	2.4 (0.5)	2.3 (0.5)	2.0 (0.8)

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Table 1
Mean Item Scores by Year of Study (SD) (contd.)

Subscale	Item	BOH1	BOH2	BOH3	All years combined
Clinical (contd.)	Responsibility for providing comprehensive patient care	2.3 (1.1)	3.6 (0.8)	2.8 (1.1)	2.7 (1.1)
	Patients' cooperation in their home care	1.5 (0.9)	2.6 (0.8)	2.3 (1.2)	1.9 (1.2)
	Patients being late or not showing up for appointments	1.8 (1.2)	2.8 (0.8)	2.9 (1.2)	2.3 (1.3)
	Working on patients with dirty mouths	1.6 (0.8)	2.3 (0.9)	1.9 (1.2)	1.8 (1.1)
Environmental	Rules and regulations of the school	1.5 (0.9)	1.8 (1.0)	2 .0 (1.4)	1.7 (1.0)
	Discrimination due to race, class status, ethnic group or gender	1.4 (0.2)	1.8 (1.0)	1.7 (1.2)	1.6 (1.0)
	Inconsistency of feedback from different teachers	2.0 (1.1)	2.8 (1.5)	2.8 (0.4)	2.4 (1.2)
	Receiving criticism from teachers	1.8 (0.8)	2.4 (1.1)	2.2 (0.8)	2.0 (0.9)
Personal	Lack of confidence in ability to be a successful oral health professional	2.5 (1.2)	2.7 (0.6)	2.9 (1.3)	2.6 (1.3)
	Insecurity concerning ability to gain a job after graduation	2.2 (1.2)	2.4 (0.8)	3.1 (1.2)	2.5 (1.2)
	Considering entering some other field of work	2.1 (1.4)	1.4 (0.5)	1.7 (1.2)	1.9 (1.2)
	Financial concerns	3.1 (1.3)	2.8 (1.4)	2.8 (1.4)	3.0 (1.3)
	Personal relationship problems	2.3 (1.2)	1.8 (1.0)	2.2 (1.4)	2.2 (1.2)
	Lack of time for relaxation	3.3 (1.3)	3.0 (1.3)	2.4 (1.2)	3.0 (1.3)
	Balancing dental school with leisure time	3.0 (1.2)	3.0 (0.8)	2.3 (1.2)	2.9 (1.2)
	Balancing family with dental school commitments	2.7 (1.4)	2.4 (1.1)	2.3 (1.2)	2.6 (1.3)
	Conflict with partner or family over career decisions	1.5 (1.0)	1.7 (1.2)	1.4 (1.2)	1.5 (1.1)
	Problems in living/home environment	1.8 (1.0)	2.0 (0.8)	2.0 (1.0)	1.9 (0.9)
	Personal physical health (including mental health)	2.1 (1.0)	2.4 (1.2)	1.7 (1.1)	2.1 (1.1)

Results

The response rate for the survey was 38.5% (n = 52). About half of the responding group were enrolled in BOH Year 1 (BOH1), with the remaining participants equally distributed between Years 2 (BOH2) and 3 (BOH3) (Table 2). Participants were predominantly female, aged under 23, domestic rather than international students and identified as New Zealand European/Pākehā or Asian. Respondents within each year group were representative of their overall classes. Those with data missing from only one question were included in the study. Six respondents were excluded from the analysis because they did not complete the questionnaire.

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Table 2
*Characteristics of Participants, by BOH Year**

Characteristics		BOH1 N (%)	BOH2 N (%)	BOH3 N (%)	Total N (%)
All[a]		26 (53)	11 (22)	12 (24)	49 (100)
Sex	Male	1 (4)	0 (0)	2 (17)	3 (6)
	Female	25 (96)	11 (100)	10 (83)	46 (94)
Age	< 20	14 (54)	4 (36)	0 (0)	18 (37)
	20–23	5 (19)	7 (64)	9 (75)	21 (43)
	24–27	4 (15)	0 (0)	1 (8)	5 (10)
	28–31	2 (8)	0 (0)	0 (0)	2 (4)
	> 31	1 (4)	0 (0)	2 (17)	3 (6)
Student status	Domestic	23 (88)	9 (82)	11 (92)	43 (88)
	International	3 (12)	2 (18)	1 (8)	6 (12)
Ethnicity	NZ European	13 (50)	5 (45)	5 (42)	23 (47)
	NZ Maori	3 (12)	0 (0)	1 (8)	4 (8)
	Pacific Island	2 (8)	0 (0)	0 (0)	2 (4)
	Asian	8 (31)	3 (27)	4 (33)	15 (31)
	Other	0 (0)	3 (27)	1 (8)	4 (8)

* percentages are column percent unless otherwise indicated

a row percent

Mean scores for each subscale across all three years of study are presented in Table 3. The subscale with the highest mean was the AS, and the lowest mean was for the ES subscale; and this was evident across all year levels. There was a slight downward gradient visible from first to third year in the AS subscales, although this was not statistically significant. A statistically significant difference was apparent between BOH1 and BOH2 in the clinical subscale (p = 0.005), although there was not a clear gradient, with BOH2 reporting a higher mean than both BOH1 and BOH3. Across all subscales, Cronbach's alpha was above 0.7, demonstrating acceptable internal validity. There were no apparent differences in alpha scores when individual items were omitted sequentially from each subscale (data available on request).

The highest reported individual stressors for all three years were "examinations and assessments" and "fear of being unable to catch up if behind" (Table 1). "Examinations and assessments" was scored highest by students in BOH1, followed by BOH2 then BOH3. A gradient in the same direction across all year levels was evident for the item "fear of being unable to catch up if behind". The third highest reported stressor was "fear of failing course or year", and again, this item was scored highest by BOH1 students. All three of the highest reported stressors related to academic factors. Some individual items in the PS subscale also scored highly for all years combined; these included "financial

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Table 3
Mean Score for Each Subscale, by Year of Study (SD)

Subscale	Number of items	Crombatch's alpha	BOH1	BOH2	BOH3	All years combined
Academic	8	0.91	4.4 (3.1)	3.0 (0.8)	2.6 (0.8)	3.0 (0.8)
Clinical	8	0.85	2.1 (0.7)[a]	2.8 (0.4)	2.4 (0.8)[a]	2.3 (0.7)
Environmental	4	0.79	1.7 (0.6)	2.2 (1.0)	2.2 (0.8)	1.9 (0.8)
Personal	11	0.86	2.4 (0.7)	2.4 (0.7)	2.3 (0.9)	2.4 (0.8)
Overall	31	0.94	2.4 (0.6)	2.6 (0.7)	2.4 (0.8)	2.5 (0.6)

a p-value < 0.05; oneway ANOVA showed that the scores for BOH1 and BOH2 were significantly different

concerns", "lack of time for relaxation" and "balancing dental school with leisure time", while the lowest reported stressors overall were "conflict with partner or family over career decisions", "discrimination due to race, class status, ethnic group or gender" and "rules and regulations of the school". The highest reported stressor within the BOH1 year group was "examinations and assessments" followed by "fear of being unable to catch up if behind". The highest reported stressor for BOH2 was "responsibility for providing comprehensive patient care" followed by "examinations and assessments" and "fear of being unable to catch up if behind". For BOH3, the highest reported stressors were "insecurity concerning ability to gain a job after graduation" and "examinations and assessments".

The free-text comment option at the end of the questionnaire was included to obtain more in-depth details of the students' perceived stressors and to provide a forum to enable students to describe any other sources of stress. The intention was to use the qualitative data to contextualise and better understand the quantitative data. Only 10 students provided responses in the free-text comment box. These included brief explanations of stress caused by environmental factors, academic workload and competition, clinical and patient issues, and student fees.

Discussion

This study aimed to explore self-perceived stressors in the oral health therapy learning environment using the modified DES questionnaire. Stressors that scored high across all year groups were related mostly to academic performance. Second-year students scored highest on stressors relating to the clinical environment. This is the year when students start treating patients. Furthermore, that the different year groups reported different stressors indicates that students would benefit from different types of support during their 3 years of study.

The low response rate is a limitation of this study. Retrospectively, it might have been better to distribute the questionnaire during the second semester. During the first

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semester, BOH2 and BOH3 students have a high clinical workload, which may have impacted their decision to participate and could have been a reason for the low response rate from these BOH year groups. Alternatively, the low number of responses could reflect that students were unable to identify potential stressors during their time of study. The high response rate from first-year BOH students could well have reflected their high expectations for academic performance. Student participation when entering a program may be higher due to their perception that getting involved could serve as an important factor for course improvement while still attending the program. Second- and third-year students may have less desire to contribute due to a belief that any changes that may arise from the survey will not be implemented while they are in the program and will not benefit them personally.

Our findings on oral health therapy students are in line with previous research findings from surveys of dental and DHDT students, that lower stress scores are consistently reported within the personal and environmental subscales as compared to the academic and clinical subscales of the DES questionnaire (Alzahem et al., 2011; Elani et al., 2014; Harris et al., 2018). This is also consistent with a previous DES survey of Bachelor of Dental Surgery (BDS) students at the University of Otago (Garde et al., 2015). Furthermore, a study that compared DHDT students to dental students in the United Kingdom found that clinical and academic factors were perceived as stressful for both groups, with no difference between the groups (Harris et al., 2017a). Research on other allied health and nursing/midwifery students had similar findings; academic stressors rated highly, as did clinical stressors (Alzayyat & Al-Gamal, 2014; Everly et al., 1994; Jacob et al., 2012; Jacob et al., 2013; Labrague et al., 2017; McCarthy et al., 2018; Tucker et al., 2006; Walsh et al., 2010).

Examinations, assessments and grades have frequently been reported as sources of academic stress for allied health, nursing/midwifery and dental students (Alzahem, Van der Molen, Alaujan, & De Boer, 2014; Elani et al., 2014; Everly et al., 1994; Garde et al., 2015; Heath, Macfarlane, & Umar, 1999; Kumar et al., 2009; Labrague et al., 2017; McCarthy et al., 2018; Rosli, Abdul Rahman, Abdul Rahman, & Ramli, 2005). This was confirmed in our study, which revealed that all three years of oral health therapy students surveyed at the University of Otago perceived examinations and assessments to be stressful. Alzahem et al. (2011) found that a number of studies mentioned fear as a source of stress among dental students; accordingly, it was no surprise that the statement "fear of being unable to catch up if behind" scored highly among the BOH students. Workload has been reported as a high stressor in studies of dental and oral health therapy students previously (Alzahem et al., 2011; Elani et al., 2014; Gordon et al., 2016; Harris et al., 2017a), and this is also the case for many allied health and nursing/midwifery students (Everly et al., 1994; Jacob et al., 2012; Jacob et al., 2013; Labrague et al., 2017; McCarthy et al., 2018; Tucker et al., 2006; Walsh et al., 2010). The findings from our study also indicate that stress about academic factors may lessen

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as students progress through the program. Fisher (1994) argued that there is a transition period for first-year students and students new to the academic learning environment when they experience high levels of stress, and this continues until they adapt to new learning strategies.

For the BOH students, clinical stressors were highest in second-year, which is the year when they start seeing actual patients. While one study of UK DHDT students and dental students found that this was not the case for its participants, the findings of the current research are consistent with findings that dental students generally find the transition from preclinical to clinical highly stressful (Alzahem et al., 2011; Harris et al., 2017a). The earlier DES survey of BDS students at the University of Otago found that while there was no difference in scores on the clinical subscale between second- and third-year students, there was a difference between these years in the environmental subscale, when students commence working on patients. The authors suggested that the clinical environment may be more stressful than clinical and academic requirements for these students; for example, the item "inconsistency of feedback from different teachers" scored highly in the environmental subscale of the BDS study (Garde et al., 2015). In their third and final year, clinical stressors appeared to lessen somewhat for the Otago BOH students. Third-year students have more experience in clinical practice, which in turn would allow them to feel more relaxed while working with patients. However, a study of oral hygiene students in South Africa found otherwise; their third-year students had more clinical stressors than first- and second-year students (Gordon et al., 2016). Nursing and midwifery students also consider the clinical environment and dealing with patients to be highly-stressful, but it is less clear which year of study is the most stressful for these practitioners. While some studies show that stress decreases by the last year of study, other studies show that the final clinical year can be the most stressful time (Alzayyat & Al-Gamal, 2014; Labrague, McEnroe, De Los Santos, & Edet, 2018).

Some individual personal items, such as "financial concerns", "lack of time for relaxation" and "balancing dental school with leisure time", also rated highly for all three years of BOH students. While tuition fees for BOH students are less than those for BDS students, some students struggle financially, and many work part-time to support themselves. This, along with the heavy BOH workload, with classes and clinics scheduled from 8.30 a.m. to 5.00 p.m. most days, and various types of assessment due throughout the year, means less time for relaxation and leisure activities.

Two of the lowest-scoring stressors were "conflict with partner or family over career decisions" and "discrimination due to race, class status, ethnic group or gender". These were also the lowest scoring stressors in the Otago BDS DES (Garde et al., 2015). This may suggest that, on the whole, students at the Faculty of Dentistry have various sources of support, including their families, their classmates and their teachers. A study

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of Canadian dental students noted the importance of social support and found that teacher support was associated with less academic stress for students (Muirhead & Locker, 2008). Similarly, other research at the University of Otago Faculty of Dentistry identified that students viewed the supportive relationships between teachers and students as being integral to their success (The, Adam, Meldrum, & Brunton, 2017). In contrast, one review of stress and coping strategies in nursing and midwifery students noted that in 13 of the 16 studies reviewed, students cited difficult relationships with clinical colleagues and clinical educators as major sources of stress. The authors noted that "a continuation of a culture where nurses continue to 'eat their young' is reflected throughout the findings" (McCarthy et al., 2018). This theme was not evident in the current research.

Recent studies have also found that stress is not necessarily debilitating. The UK study of DHDT students and dental students observed that levels of stress, depression and anxiety reported by students were in the normal range and that, overall, the students had high levels of positive psychological wellbeing (Harris, Wilson, Hughes, & Radford, 2017b; Harris et al., 2018). A study comparing dental students at University of Otago to dental students in several other universities found that students with a high sense of cohesion ("the capability to perceive that one can manage in any situation independent of whatever is happening in life"), who used adaptive coping strategies, experienced less stress (Gambetta-Tessini, Marino, Morgan, & Anderson, 2016). Furthermore, a study of students majoring in psychology, nursing and social work at an American university found that having a higher level of emotional intelligence (includes emotional regulation, emotional self-awareness and accurate appraisal of emotion in others) was associated with lower perceived stress (Enns et al., 2018), while a study of dental hygienists at Ohio University found that higher emotional intelligence scores were significant predictors of both clinical and academic success (Partido & Stafford, 2018). Therefore, while it may be necessary to investigate options for reducing stress for BOH students, studies show that many students already have stress-managing capabilities and a degree of stress may, in fact, have a positive effect in challenging students to achieve and in preventing understimulation and boredom (Alzahem et al., 2011; Harris et al., 2017a; Harris et al., 2017b). This should be acknowledged in any future stress reduction strategies.

Although there are many studies that assess the impact of stress on dental students, and the same stressors are being identified year after year (Al-Omari, 2005; Alzahem et al., 2014; Elani et al., 2014; Gambetta-Tessini et al., 2013; Polychronopoulou & Divaris, 2009), the number of studies of the content and effectiveness of stress management programs is limited (Alzahem et al., 2014). A systematic review of stress management in dental students found, as did a review of intervention strategies for nursing students' stress and anxiety, that the two main strategies used tend to be reducing the number of stressors and increasing the ability to cope with stress (Alzahem et al., 2014; Turner & McCarthy, 2017).

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In terms of reducing stressors in the BOH program, assessment requirements are scheduled to ensure students are not overloaded, and these are reviewed regularly in attempts to further reduce unnecessary workload. Students are made aware of strategies to relieve stress related to academic performance at the beginning of their professional course. Students are directed to make use of appropriate support services, but more sessions on academic writing, research and study skills could be incorporated into the BOH program. When BOH students start to treat patients, additional support is needed in the clinical environment. Appropriate student-to-tutor ratios should be maintained to ensure that students have access to the clinical support they require. The et al. (2017) found that both students and staff at the University of Otago Faculty of Dentistry expressed concern that there were not enough clinical tutors, and a shortage of tutors in dental schools due to recruitment and financial difficulties has been widely reported as a challenge elsewhere (Ebbeling et al., 2018).

Dental schools should also be prepared to provide personal support and pastoral care throughout all years of study, since personal stressors are also present for all year groups. Personal tutor schemes have been introduced in some dental schools in the UK and the US in recognition of the valuable support teachers can provide in meeting regularly with students to discuss academic progress and any issues that may be affecting progress (Muirhead & Locker, 2008). While the University of Otago BOH staff are always willing to offer informal support to students, a more formal support scheme could be investigated further; these have been shown to improve student performance, morale and motivation, as well as to reduce stress (Muirhead & Locker, 2008).

A challenge for the future will be to provide the right type of support at the right time. Alzahem et al. (2014) found that a variety of stress management programs and techniques have been used for dental students but that they differed in their content, duration and effect. While some helped to reduce the impact of stressors, such as stress-prevention lectures, others focused on enhancing coping skills through techniques such as deep breathing and yoga. Ultimately, programs should help dental and oral health therapy students to achieve high outcomes with the least expenditure of time and effort. While stress management lectures could be incorporated into the BOH program, online stress management programs could also be investigated, because these have been shown to be successful, cost-effective and easily accessible (Alzahem et al., 2014). Further research with a larger cohort of oral health therapy students may add to the limited research available at present and provide additional valuable information regarding the type of support students want to assist with their learning outcomes.

Conclusion

This study explored University of Otago BOH students' self-perceived stressors. Results confirmed that these are similar to those experienced by students in other oral health therapy, dental hygiene and dental programs, as well as in midwifery/nursing and in

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other allied health professional programs. While there were some stressors relating to personal settings, the main sources of stress for the BOH students were academic and clinical, and these differed depending on what year of the program students were in. Further research would determine the type of interventions required, and stress management should be directed at both reducing the number of stressors for students and increasing their stress-coping abilities.

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