



Stress amongst Dental Students at an Emerging Medical University

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ABSTRACT Stress among dental students is a significant problem and affects both individual well-being and rates of academic failure. The objectives of this research were to identify stressors affecting students at a medical university in a developing country. The investigation utilised an experimental research design using a purposive sample. A quantitative survey questionnaire, the Modified Dental Environment Stress (DES) questionnaire, was used. The instrument is standardised and has a reliability index of Cronbach's $\alpha = 0.92$. Ethical clearance was obtained through the appropriate university committees. Data were analysed using descriptive statistics and the Pearson's Chi square test. Findings were that females reported higher stress levels than males. Third-year students had the highest total stress scores which coincided with the onset of patient care. Other results found that prosthodontics was reported as the most stressful rotation in the programme in terms of mis-communication and poor professional relationships.

INTRODUCTION

Dentistry programmes must be balanced in terms of preparing students for clinical work and ensuring that they lead balanced lives (Pillay et al. 2010; Al Singh et al. 2013). In South Africa several key variables are significant stressors for students' namely academic failure, poor accommodation and inadequate finances (Pillay et al. 2010). Gender differences in stress levels, with higher levels of stress amongst female students, have also been noted (Pillay et al. 2010; Babar et al. 2015). Research also suggests that students with higher stress levels are prone to lower levels of life satisfaction and associated psychosocial consequences and as dentistry is a high-stress profession (Elani et al. 2014), dental school is where the stress begins (Tanga De et al. 2011). Various studies carried out in Malaysia (Babar et al. 2015) and the Middle East (Al Singh et al. 2013) have reported high perceived stress levels amongst dental students. These

stressors not only affect the students' psychological and physical health but can adversely affect the quality of care that they offer to patients (Birks et al. 2009).

Dental students experience significant levels of stress (Elani et al. 2014). In support of this Koochaki et al. (2011) report that medical and dental students have high stress prevalence levels from 25-90 percent. Dental students also experience multi-factorial stress which includes financial, social, family and academic stressors (Al-Saleh et al. 2010). However, research suggests that working hours and pressure from perfectionistic clinical staff are typically more stressful than personal problems (Al-Saleh et al. 2010). Stress levels have been reported as being more acute during dental students' final years of study owing to the increasing level of difficulty and sheer amount of academic work (Amin et al. 2011).

Fundamentally, stress is a decision making process by which an individual evaluates what is at stake (appraisal of risk) and what options are available (appraisal of coping). Only after an individual processes the potential of risk (to self) can the term stress be used and high levels of stress may result in emotional and health problems (Chilukuri et al. 2012). It must be stated that coping mechanisms used by students under

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stress are often not appropriate for instance, drinking alcohol and sleeping whereas positive coping mechanisms such as exercise and time management are frequently ignored (Mogotsi et al. 2014). A longitudinal study noted that dental students drink at hazardous levels and continue to drink excessively as practising dentists, a significant number also suffer from anxiety and stress (Newbury-birch et al. 2002). Fear of failing, finishing clinical work and examination results were found to be high stressors in some studies (Babar et al. 2015).

For the purpose of this study, the term *stressor* refers to the experience of a life event which can result in either adverse physical or psychological consequences or both.

Aim

This study aimed to identify the perceived stressors of senior dental students at a medical university in a developing country with special attention given to gender differences in the identification of stressors.

METHODOLOGY

The research design was exploratory and quantitative in nature. A survey using the Modified Dental Environment Stress (DES) questionnaire developed by Garbee et al. (1980) was used. The tool has 44 Likert type scale questions constructed to measure levels of stress in a dental environment. The forty-four (44) item checklist is divided into four (4) categories academic stressors, clinical stressors, social stressors and coping mechanisms (stress management). The instrument is standardised and has a reliability index of Cronbach's $\alpha = 0.92$. In terms of validity The DES has proven to cover relevant aspects of a dental students' environment as it has been used in several global studies (Dush et al. 2005). A non-random purposive sample of all students registered in dentistry, was selected. The questionnaires were distributed to the one hundred and sixty two (162) registered Bachelor of Dentistry Students (BDS) at levels 3,4 and 5 of their degree. Data were analysed using descriptive statistics. Bar charts and cross tabulations were used as they give a clear illustration of the data. Pearson's chi square test was used (level of significance < 0.05) to see if males and females differed in frequency in which they

reported the items on the scale. The participants signed a consent form which explained the reason for the research and issues relating to confidentiality. As the questionnaire was self-report in nature and the name of the participant was not required confidentiality was assured. Ethical standards following guidelines from the Health Professions Council of South Africa were adhered to and permission obtained through the university (which caters mostly for previously disadvantaged students) in the Gauteng area in South Africa.

ANALYSIS AND DISCUSSION

Demographic Results

Eighty-eight (88) of hundred and sixty-two (162) students enrolled in BDS (Bachelor of Dental Surgery) participated in the survey. This was an overall response rate of fifty four percent (54%), which is fairly low but still acceptable. Of these respondents fifty percent (50%) were female and fifty percent (50%) male. The majority of the sample, that is forty-six percent (46%) were twenty-five years (25 yrs.) or older (Standard Deviation SD = 1.41). This is because dentistry is a six year programme plus many respondents hold another degree and some have repeated scholastic levels. The majority of the sample, that is, ninety-five percent (95%) were black, of these seventy percent (70%) were from a rural background and thirty percent (30%) from either urban or peri-urban backgrounds. Three percent (3%) of the sample were Indian and two percent (2%) white, all from urban backgrounds.

Summary of the Modified Dental Environment Stress (DES) Questionnaire Results

The majority of the sample fifty-nine percent chose dentistry as their first choice of degree while forty-one percent (41%) or thirty-six (36) individuals did not. Forty-seven percent (47%) of the sample are in a steady relationship while the majority are single (53%). A cross tabulation indicated that students in relationships (47%) reported higher stress levels than those who were single. It was also found that participants in their third (76.9%) and fourth (74.5%) years of study were more stressed than those in their fifth year of study (65.6%). This is almost certainly because fifth year students are involved

in mostly clinical work and do not have the intense concentration of tests and exams plus clinical work. Third-year students had the highest total stress scores. This confirms research by Elani et al. (2015) that more senior students have higher stress levels because of the higher workloads.

A significant difference was found between males and females in terms of stress levels with females reporting higher stress levels than males ($p=0.01$). Females (77.3%) reported higher stress levels than males (66.8%) overall (See Table 1). This was the only statistically significant result in the study and concurs with recent research by Pillay et al. (2010) and Babar et al. (2015).

Table 1: Average DES score per person according to gender for each level of degree and combined

<i>Gender</i>	<i>BDS 3 (in per- cent)</i>	<i>BDS 4 (in per- cent)</i>	<i>BDS 5 (in per- cent)</i>	<i>Combi- nation (in per- cent)</i>
Male	70.2	64.8	65.4	66.8
Female	80.9	85.2	65.9	77.3

Participants who had not repeated a year level (73.95%) had higher stress scores than those who were repeating (68.6%) while previous degree holders showed higher stress levels (75.8%) than non-degree holders (65.1%). Generally, the majority of participants in all groups reported a high stress level which supports the results of previous research (Elani et al. 2014; Babar et al. 2015). Negative coping mechanisms were reported by over a quarter of the sample. Twenty-eight percent of the total sample (28%) used alcohol which supports earlier research by Newbury - birch et al. (2002) and twenty-two percent (22%) used sleep in order to manage stress. Alcohol was commonly used as a stress reliever for many students who were trying to cope with their anxiety over problems in everyday living. A common misperception is that alcohol is an effective stress relieving therapy, which it may be in the short term (by allowing the individual to forget), but in the long term alcohol abuse and addiction can occur leading to academic failure (Newbury-birch et al. 2002; Mogotsi et al. 2014). Positive coping mechanisms reported by the sample were exercise (16%) and spending time with a partner (8%). Other form of stress management that were mentioned by several participants were going

to church, watching stand-up comedians, listening to music and playing video games. Going to church could be defined as a form of social support which is consequently a positive coping mechanism. However, the other reported forms of stress management, if not carried out in moderation, could be regarded as negative coping mechanisms as they are likely have an adverse long term effect on stress levels by causing students to put off doing academic work (procrastination).

The survey required each participant rate departments in the Faculty of Dentistry from the least stressful to most stressful (See Table 2). Prosthodontics received the highest stress rating score (159) followed by operative dentistry (116) and orthodontics (98) out of a maximum stress score of 192. This result was underpinned by another question in the modified DES which asked what academic factor students experienced as being most stressful. The majority of the sample stated prosthodontics (66%). Mis-communication, abuse of authority by lecturers and lack of understanding between staff and students are listed as reasons for the department receiving this negative evaluation.

Table 2: All levels total stress scores on the DES for departments

<i>Department</i>	<i>Total stress scores</i>
Prosthodontics	159
Periodontology	49
Operative dentistry	116
Oral medicine	62
Oral pathology	56
Orthodontics	98
Community dentistry	42
MFOS	58
Maximum stress	192

CONCLUSION

Dental students and teaching staff need to be aware of the importance of maintaining good physical and mental health. A large part of effective stress management entails that individuals must understand the implications of stress. The ability to deal with stress effectively contributes to the overall success of studies. Within the limitations of this research findings indicated that dental students, particularly females, reported high levels of stress. Although some stress is necessary for motivation the amount of

stress reported (thus experienced) by participants in this study is likely to be debilitating stress which overwhelms participants leading to problems in living such as depression and/or drinking alcohol and in some instances poor academic performance. The general value of this research is that it identified the sources of student stress thus clinical educators and administrators in the dental school can make necessary interventions, adjustments and modifications.

RECOMMENDATIONS

The following recommendations arising out of the research are made:

- ♦ workshops and programmes explaining stress and anxiety should be mandatory through all the academics levels;
- ♦ the association between stress and failure should be taken into account when designing dental curricula;
- ♦ dental students should be taught strategies for coping with both physical and psychological stress through an up-graded psychology curriculum.

RECOMMENDATIONS FOR FUTURE STUDY

Research recommendations arising out of the investigation are that:

- ♦ a more comprehensive investigation involving the different levels of study;
- ♦ an investigation should be undertaken to compare patterns of stress at all the dental schools in the country;
- ♦ an in-depth qualitative study should be undertaken using interviews and focus groups to explore how students “feel” when they are stressed to gain a broader view of the topic.

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