

Perception of Academic Stressors Among Dental Undergraduate Students



Tayyaba Saleem¹

Raheela Yasmin²

Anbreen Aziz³

Usman Mahboob⁴

Ahsan Sethi⁵

BDS, FCPS, MME

BDS, DCPS, MHPE, PhD

BDS, MHPE

MBBS, MPH, FHEA, DHPE, Fellow FAIMER

BDS, MPH, MMed, FHEA, MAcadMed, FDTFed, PhD

OBJECTIVE: Present study was conducted to assess the perceived academic sources of stress among undergraduate dental students and determine its association with gender, year of study, pre-university education and accommodation. This study was conducted in dental section, Islamabad Medical and Dental college, Islamabad from July to November 2016.

METHODOLOGY: BDS students were asked to rate their perceived stress on four point Likert scale of modified version of Dental Environment Stress (DES) questionnaire. Descriptive statistics were applied to find the mean scores and SD on all items. Using SPSS v.21, Kruskal Wallis test was used to compare stress levels among different undergraduate professional years and Mann-Whitney U test was applied to determine the association and stress sources and demographic variables.

RESULTS: A total of 172/200 participants responded (86%) to the survey. Overall stress in undergraduate dental students was in moderate range. Majority of students (93%) reported that syllabus load was either stressful or very stressful (3.53 ± 0.64), 85% students reported lack of relaxation time as stressful or very stressful (3.42 ± 0.86) and fear of failing was reported as stressful or very stressful by 82.5% (3.34 ± 0.87). When stress scores of all classes were compared third year reported more mean stress scores than other years (2.50 ± 0.50). Females were more stressed compared to males with mean score of (2.37 ± 0.39), students living at home were more stressed than hostelites (2.38 ± 0.38) and those with GCE A-levels had higher stress (2.40 ± 0.38) compared to HSC background students. Academic performance was the most stressful of the five stress domains (3.07 ± 0.74).

CONCLUSION: Syllabus load followed by lack of time for relaxation and fear of failing were the most perceived sources of stress. Academic performance was the most stressful of the five stress domains and third year BDS was the most stressed class.

KEY WORDS: Dental Education; Dental Students; Psychological Stress, Stressor, Undergraduate,.

HOW TO CITE: Saleem T, Yasmin R, Aziz A, Mahboob U, Sethi A. Perception of academic stressors among dental undergraduate students. J Pak Dent Assoc 2021;30(4):228-234.

DOI: <https://doi.org/10.25301/JPDA.304.228>

Received: 14 January 2021, Accepted: 19 June 2021

INTRODUCTION

Stress is body's reaction to physical, mental, or emotional stimuli.¹ Dental education is challenging and stressful experience, stress levels among dental graduates are higher than general population.² Studies show

multifactorial nature of stress that is associated with psychological and physical effects in different phases of dental education.^{3,4} The rapid increase in curricular content has steered attention of dental educationists for identifying and addressing the academic stress and stressors among their students.⁵ This is the key to enhance quality of learning environment.⁵ In addition, social factors such as accommodation or educational background with which students enter dental institution may also provoke stress.⁶

Dental environment stress (DES) is usually reported to be caused by frequent exams, time limited course goals, clinical and laboratory assignments, patient handling, high performance expectations, financial status and insufficient relaxation time.⁷ Stress symptoms may include tension, anxiety, fear, depression, fatigue, headache, cynicism

1. Professor and HOD Department of Prosthodontics, Dental Section, Islamabad Medical & Dental College (IMDC), Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad.
2. Dean Riphah Academy of Research and Education & Director MHPE Program Department of Medical Education, Riphah International University, Rawalpindi.
3. Assistant Professor, Department of Dental Health Professions Education & Research Dental Section, Army Medical College (AMC), Armed Forces Institute of Dentistry (AFID), Rawalpindi
4. Associate Professor, Department of Institute of Health Professions Education and Research, Khyber Medical University (KMU), Peshawar.
5. Assistant Professor (Health Professions Education), Department of Public Health, College of Health Sciences, QU Health, Qatar University, Doha, Qatar.

Corresponding author: "Prof. Dr. Tayyaba Saleem" <drtayyabasaleem@gmail.com>

dizziness, insomnia, impaired immune system and tachycardia.^{8,9} When left unattended these may potentially transpire in burnout and suicide in some severe situations.¹⁰

Stress in dental students had been identified using different stress scales, including, "Dental Environment Stress Scale" (DES),¹¹ "Maslach Burnout Inventory" (MBI),¹² and "Psychosocial Stress Inventory" (PSSI).¹³ Among these, DES is commonly utilized.¹⁴

Many studies have identified stressors among dental undergraduates, however there is scarcity of literature exploring stress sources among Pakistani undergraduate dental students, and explore its association with the demographic variables. Therefore, the aim of the present study was to explore perceived stress sources, stress levels and their association with sociodemographic factors of gender, pre-university education system (General certificate of education (GCE) Advanced level or A-levels and Higher school certificate HSC, and accommodation etc.

METHODOLOGY

A descriptive cross-sectional survey targeting all undergraduate students from first to final year BDS was done from July to November 2016 in dental section, Islamabad Medical and Dental College (IM&DC) Islamabad. The study targeted all students of BDS (N=200), those with known psychological issues, who did not give consent, and those who were not present on the day of survey were excluded. Ethical approval was obtained from the Institutional Review Board (letter no. IMDC/DS/IRB/50, dated 16th June 2016.). Al-Sowigh ZH modified "Dental Environment Stress" (DES) questionnaire was used. The tool comprises of 41-items grouped under five stress-provoking domains i.e., personal factors, educational environment, workload, clinical training, patients, and academic performance with reported reliability of 0.89 with Cronbach's Alpha.⁴ It was selected for the present study because it was developed for and used in a culturally and religiously similar environment. The DES Questionnaire was validated by ten faculty members of IM&DC to determine suitability for local use, suggested changes were incorporated.

Students were approached in their respective lecture halls. Due permission from the Principal and respected faculty was taken by primary researcher (TS), who took verbal informed consent from students and explained questionnaire format. Data confidentiality was ensured by keeping the questionnaires anonymous. Stress domains were not disclosed to students in distributed questionnaire. This study utilized Likert scale with four-point response against each item from 1: not stressful, 2: somewhat stressful, 3: stressful, and 4: very stressful.

Filled questionnaire were collected, a separate code was given, and data were entered and analysed in SPSS version 21.

STATISTICAL ANALYSIS

Frequencies and percentages were calculated for qualitative data including socio-demographic variables i.e., age groups, gender, living accommodation, pre-university education, and marital status. Internal reliability of all questionnaires responses was determined using Cronbach's Alpha (0.87). In this study, stress was considered mild if it had a mean score of 1.99, moderate with a score of 2-2.9 and 3 or more was considered severe.

For all classes, means with standard deviations were calculated jointly and separately for the 41 items in the questionnaire. Mean stress scores and their standard deviation were calculated for all demographic variables and the "pentagon of stressors" (five stress domains) consisting of personal aspects, educational workload, environment, clinical work, and patient associated factors, and academic achievement. Distribution of data was assessed with Shapiro-Wilk test which showed that it was not normally distributed.

Kruskal Wallis test was used to find association among the four BDS classes and their stressors on the four-point Likert scale. The ranking orders were analysed to determine the highest mean rank for study years, which was then related to the statistical significance. Dissimilarity in replies from the BDS classes were considered statistically significant. Significance in difference of perceived academic stressors with demographic variables and stressor domains was found with Mann-Whitney U test. The ranking orders were analysed to determine the higher mean rank for each demographic variable separately. A p-value of less than 0.05 was deemed statistically significant.

RESULTS

One hundred and seventy two out of two hundred students participated in the study giving a response rate of 86%. The students were divided into three age groups, first ranging from age 18 to 21 years, second from 21-23 years and third group of age 24 and above. Majority of the students 56% were in the second age group, with a mean age of 21 ± 1.6 years. Socio-demographic details of participants are presented in Table 1. As there were no married participants, further comparisons were not done with marital status.

Mean scores of highest stressors for all students who reported these items as stressful or very stressful, in the

descending order were "Overloaded feeling due to syllabus load" 93% (3.53±0.64), followed by lack of relaxation time 85% (mean=3.53±0.64), "Fear of failing" 82.5% (3.34±0.87), "Clinical requirements" 81.3% (Mean=3.27±1.0), "late ending day" 75% (Mean=3.17, ±1.00) along with "examinations" 72.7% (Mean=3.13, ±0.98).

Table 1: Sociodemographic characteristics of the study population

Variable	Number (N)	Percentage (%)
Gender		
Male	35	20.3
Female	137	79.7
Intermediate background		
F.Sc	138	80.2
A-Level	34	19.8
Year of study		
1 st year	41	23.8
2 nd year	47	27.3
3 rd year	40	23.3
4 th year	44	25.6
Accommodation		
Home	54	31.4
Hostel	118	68.6

Table 2: Comparison of mean of DES scores of each demographic variable within stress domains

Domain	Demographics		Mean DES Score	SD
Personal Factors	Gender	Male	2.00	0.48
		Female	2.10	0.41
	Intermediate background	A level	2.26	0.56
		HSC	2.06	0.41
	Accommodation	Hostel	2.05	0.41
		Home	2.09	0.44
Educational environment	Gender	Male	2.11	0.53
		Female	2.18	0.52
	Intermediate background	A level	2.17	0.55
		HSC	2.17	0.51
	Accommodation	Hostel	2.07	0.49
		Home	2.21	0.53
Workload	Gender	Male	3.01	0.61
		Female	2.88	0.67
	Intermediate background	A level	2.89	0.57
		HSC	2.91	0.68
	Accommodation	Hostel	2.92	0.64
		Home	2.90	0.66
Clinical training and patients	Gender	Male	2.14	0.61
		Female	2.41	0.70
	Intermediate background	A level	2.41	0.62
		HSC	2.34	0.71
	Accommodation	Hostel	2.24	0.74
		Home	2.41	0.66
Academic performance	Gender	Male	2.72	0.83
		Female	3.16	0.71
	Intermediate background	A level	3.00	1.00
		HSC	3.06	0.73
	Accommodation	Hostel	2.94	0.83
		Home	3.13	0.69

Minimum stress was perceived with "language barrier" 6% (1.4±0.6), "Availability of qualified laboratory technicians" 16.7% (mean=1.73±0.88) and "Inadequate number of instructors/teachers in relation to student" 18% (1.7±.95)

Table 3: Mean DES Scores and Level of Significance with Year of Study

Domains	Stressor	Overall Mean SD	First-year Mean (SD)	2nd Year Mean (SD)	3rd year Mean (SD)	Final year Mean (SD)	p-Value*
Personal factors (Self-Efficacy beliefs and social factors)	Fear of failing a course of the year	3.34 0.87	3.32 0.93	3.45 0.88	3.18 0.90	3.39 0.79	0.424
	Fear of being unable to catch up if behind	2.91 0.88	2.73 0.87	2.85 0.91	2.90 0.87	3.14 0.85	0.159
	Lack of confidence to be a successful dental student	2.31 1.00	2.39 1.16	2.32 0.91	2.15 1.03	2.39 0.95	0.676
	Fear of not being able to join a post graduate dental education program	2.10 0.98	1.90 1.01	2.06 0.99	2.30 1.07	2.14 0.85	0.274
	Insecurity concerning professional future	2.13 0.96	2.20 1.05	2.09 0.83	2.18 1.15	2.09 0.83	0.994
	Insecurity concerning lack of employment positions	2.20 1.00	2.54 1.10	2.00 0.83	2.35 1.08	1.98 0.91	0.044
	Lack of confidence in own decision making	2.13 1.00	2.02 0.99	2.22 1.05	2.02 0.92	2.23 1.04	0.746
	Language barrier	1.40 0.59	1.20 0.46	1.33 0.60	1.38 0.54	1.68 0.67	0.001
	Lack of confidence to be a successful dentist	1.96 0.96	1.83 0.97	2.02 0.97	2.02 1.00	1.95 0.94	0.696
	Lack of home atmosphere in living quarters (hostel)	2.11 1.30	2.05 1.26	2.26 1.41	2.20 1.27	1.93 1.25	0.637
	Financial responsibilities	2.07 1.10	2.02 1.15	1.93 1.10	2.12 1.09	2.23 1.10	0.483
	Forced postponement of marriage or engagement	1.54 1.00	1.44 0.98	1.48 0.96	1.69 1.03	1.59 1.06	0.369
	Marital adjustment problems	1.45 0.90	1.44 0.84	1.22 0.67	1.75 1.03	1.45 1.00	0.027
	Necessity to postpone having children	1.40 0.89	1.40 0.87	1.28 0.86	1.46 0.85	1.48 0.98	0.324
	<i>Overall Mean: Personal factors</i>	<i>2.08 0.43</i>	<i>2.03 0.35</i>	<i>2.05 0.40</i>	<i>2.12 0.52</i>	<i>2.12 0.45</i>	
Educational Environment	Inconsistency of feedback on work between different instructors	2.12 0.83	1.85 0.75	2.19 0.74	2.17 0.84	2.26 0.98	0.123
	Receiving criticism about work	2.51 1.00	2.41 1.10	2.47 1.02	2.47 0.99	2.66 0.94	0.686
	Being treated as immature & irresponsible by faculty	2.71 1.04	2.76 1.16	2.91 0.95	2.65 1.05	2.50 1.00	0.253
	Availability of qualified laboratory technicians	1.73 0.88	1.62 0.84	1.74 0.86	1.74 0.85	1.79 0.99	0.870
	Lack of input/say in the decision-making process of college	2.29 0.94	2.22 0.96	2.17 0.84	2.52 1.06	2.26 0.90	0.394
	Getting study material	2.14 0.96	2.05 1.05	2.22 0.92	2.38 0.98	1.93 0.90	0.138
	Shortage of allocated laboratory time	2.22 1.12	1.71 0.93	1.78 0.92	2.92 1.16	2.47 1.03	0.000
	Inadequate number of instructors/teachers in relation to student	1.70 0.95	1.51 0.90	1.85 0.96	1.90 0.98	1.55 0.95	0.034
	Shortage of allocated clinical time	2.30 1.12	1.78 0.96	1.91 0.97	3.00 1.06	2.55 1.09	0.000
	Amount of cheating in dental college	1.94 1.10	1.87 1.18	1.76 1.04	2.21 1.06	1.95 1.10	0.188
	<i>Overall Mean: Educational environment</i>	<i>2.17 0.52</i>	<i>1.98 0.44</i>	<i>2.10 0.47</i>	<i>2.40 0.56</i>	<i>2.19 0.53</i>	
	Amount of assigned classwork (Assignments)	2.37 1.07	2.63 1.04	2.28 1.04	2.50 1.16	2.09 1.01	0.094
	Difficulty of class work (Assignments)	2.24 0.97	2.39 1.00	2.32 0.90	2.27 1.13	1.98 0.85	0.199
	Late ending day (Long hours)	3.17 1.00	3.56 0.87	2.98 0.90	3.32 0.97	2.86 1.11	0.001
	Lack of time for relaxation	3.42 0.86	3.54 0.78	3.19 0.97	3.63 0.71	3.36 0.89	0.078
Workload	Overloaded feeling due to huge syllabus	3.53 0.64	3.73 0.55	3.28 0.68	3.70 0.52	3.45 0.70	0.001
	Lack of time to do assignments	2.72 0.88	2.98 0.91	2.68 0.73	2.62 0.89	2.59 0.97	0.126
	<i>Overall Mean: Workload</i>	<i>2.90 0.65</i>	<i>3.14 0.59</i>	<i>2.79 0.65</i>	<i>3.01 0.66</i>	<i>2.72 0.65</i>	
	Patients being late or not showing for their appointments	2.38 1.06	1.63 0.86	1.94 0.99	2.75 0.74	3.20 0.82	0.000
	Lack of cooperation by patients in their home care	2.26 0.98	1.73 0.78	2.02 0.94	2.55 0.82	2.75 1.01	0.000
	Fear of dealing with patients who do not disclose the existence of contagious disease	2.63 1.078	2.12 1.12	2.38 0.99	3.05 0.96	3.00 0.96	0.000
	Working on patients with dirty mouths (poor oral hygiene)	2.45 1.10	1.85 1.09	2.55 1.06	2.80 0.99	2.55 1.09	0.001
	Responsibility of getting suitable patients	2.30 1.03	1.66 0.88	2.23 0.94	2.70 1.02	2.61 0.99	0.000
	Difficulty in learning precision manual skills required in pre-clinical work	2.27 0.95	1.90 0.92	2.19 0.85	2.50 0.99	2.48 0.95	0.016
	Transition from pre-clinic to clinic work	2.30 0.98	1.98 0.99	2.40 0.94	2.52 1.06	2.30 0.90	0.078
	Difficulty in learning clinical procedures	2.26 0.88	2.08 0.93	2.24 0.82	2.30 0.88	2.40 0.90	0.375
	<i>Overall Mean: Clinical training and patients</i>	<i>2.36 0.69</i>	<i>1.88 0.68</i>	<i>2.25 0.61</i>	<i>2.65 0.60</i>	<i>2.66 0.58</i>	
	Competition of grades	2.82 1.14	3.20 1.09	2.74 1.19	2.25 1.19	3.07 0.88	0.001
	Examinations and quizzes	3.13 0.98	3.56 0.81	3.00 1.04	2.90 1.03	3.07 0.93	0.006
	Clinical requirements (quota)	3.27 1.05	2.52 1.20	3.11 1.01	3.75 0.67	3.68 0.77	0.000
	<i>Overall Mean:</i>	<i>3.07 0.74</i>	<i>3.09 0.73</i>	<i>2.95 0.80</i>	<i>3.00 0.70</i>	<i>3.28 0.67</i>	

Mean scores for demographic variables revealed that females were more stressed (2.37 ± 0.39) than males (2.25 ± 0.356). Students with GCE A-level were slightly more stressed (2.40 ± 0.38) than F.Sc. students (2.34 ± 0.39) and those living at home with families were more stress (2.38 ± 0.38) than those living in hostels (2.28 ± 0.39).

Mann Whitney U test revealed following results for the socio-demographic variables under study. Female students were significantly more stressed from "clinical requirements (quota)" ($p < 0.01$), "competition of grades" ($p = 0.01$), "transition from pre-clinical to clinical work" ($p = 0.01$), "conducting procedures on patients with poor oral hygiene" ($p = 0.01$), "fear of being unable to catch up if left behind" ($p = 0.03$), "fear of not being able to join a postgraduate dental education program" ($p = 0.03$), "insecurity concerning lack of employment positions" ($p = 0.03$), "Responsibility of getting suitable patients" ($p = 0.03$).

A comparison of educational background was done with DES, which revealed GCE A-level students were more stressed with "being treated as immature & irresponsible by faculty" ($p = 0.03$) besides "lack of confidence to be a successful dental student" ($p = 0.04$). However, HSC students felt more stress with "language barrier" ($p = 0.02$) and in "getting relevant study material" ($p = 0.02$). Comparison of accommodation revealed that students who live in their homes were significantly stressed in "insecurity related to professional future" ($p = 0.045$), "insecurity of lack of employment" ($p = 0.004$) along with "receiving criticism about work" ($p = 0.005$). Students living in the hostels on the other hand reported "lack of home atmosphere in hostel" $p < 0.001$ with statistically significant difference. Comparison of DES domains with demographic variables and item-wise DES mean scores which were calculated for the four BDS classes along with the results of Kruskal Wallis test are shown in Table-2 and Table-3, respectively.

DISCUSSION

This study evaluated various stressors perceived by undergraduate dental students and their association with demographic variables. Moderate levels of DES scores (2.35 ± 0.38) were reported by students. Elani et al in a systematic review reported a similar pooled mean DES (2.34 ± 0.23), whereas Poly et al. in a comparative study of dental and medical students reported similar mean DES (2.39 ± 0.40) for dental and medical students (2.21 ± 0.29).^{14,15}

Three highest stress factors reported in this study were syllabus load (3.53 ± 0.64), lack of relaxation time (3.42 ± 0.86) and fear of failing (3.34 ± 0.87). Tangade et al. reported fear of failing (3.07 ± 0.72), unemployment fear (2.73 ± 0.74), financial issues (2.71 ± 0.83), and lack of relaxation time

(2.69 ± 0.95).¹⁶ Al-Sowygh et al reported assigned class work (3.52 ± 0.79), late ending day (3.52 ± 0.81) and Lack of time for relaxation (3.43 ± 0.79) as most stressful factors.¹⁷ A local study reported, huge syllabus as the second most common stressor.¹⁸ Another study reported "late ending day" as major stressor for males, and final-year students.³ These results endorse the result of the present study, dental curriculum is inherently demanding, clinical work requirements and assigned academic load contribute to stress.¹⁵ Variation in highest perceived stressor in studies can be attributed to difference in daily working hours of many institutes and financial support from family for local students.

Present study identified that BDS classes reported significant differences in various stress items. "Late ending day", "syllabus load", "examination and quizzes" were more stressing for first year. These results are endorsed by a study which reported same stressors for their first- and second-year students, however "amount of assigned work" stressed their students more⁴ compared to examination and quizzes. "Lack of relaxation time" and "moving away from home" were main stressors for first year in another study.¹⁹ First year students of present study were more stressed about "Insecurity concerning lack of employment", like a Malaysian study.²⁰ Senior students have better knowledge of dentistry and information on various job opportunities in the market which could have reduced this stress in subsequent years.

Third year BDS had significantly high scores for stressors associated to clinical training, these results are in accordance with previous studies.^{4,20-22} A shift from preclinical to clinical settings and application of procedural skills on real patients is demanding for third year students. Previous studies showed a similar trend with increase in stress levels from first year to the final year with stress peaking in the 3rd year.^{3,16,23} Conversely a Turkish study reported that clinical years were less stressed contrasted to preclinical years.²⁴ This could be due to syllabus load in addition to the atmosphere created by the preclinical staff, which may add to the overall stress for the students.

Socio-demographic aspects affect dental students. In this study female students were significantly more stressed, these results are in accordance with previous studies.^{20,25,26} This could be because females confess more to having stress or they may feel, and encounter added stress.²⁷ Generally, males do not express their stress or cope with it. Living in a "patriarchal society" and fearing to fail their duties Pakistani men rarely admit depression or stress.¹⁵

In Pre-university education system comparison total mean scores for the students of GCE A-level was slightly more (2.40 ± 0.38) as compared to High School Certificate

HSC counterparts (2.34 ± 0.39). Effect of pre-university education on stress levels has scarcely been reported in literature. However, some studies reported comparison of having or not having a previous degree with stress levels.^{27,28} One study reported insignificant difference in academic success of medical students from different pre-university education systems. GCE A-level students give extra study time and hence tuition fee.²⁹ They also go through substantial documentation for equivalence before admission, these reasons could result in greater stress for them.

Dental curriculum is essentially didactic, students with GCE A-level are trained in critical thinking and active involvement in learning. This could explain why A-Level students are significantly more stressed than their HSC counterparts on "being treated as immature by faculty" and "lack of confidence to be a successful student". Since A-level students were in minority in present study the results cannot be generalized to all A-level dental student population. Significantly higher stressors for HSC students were "language barrier" and "difficulty in getting study material". This could be because two languages are still used in F.Sc. examinations and students are dependent on didactic teaching strategies.

In this study the students who were living with families reported higher stress scores, these results are endorsed by one previous study.³⁰ Conversely, other studies have reported that students living away from home were more stressed.^{16,31} Possible reason could be that more time and effort are required for commuting, there are added claims on student's time by their families and friends, or the reason could be the feeling of "academic isolation".²⁸

Comparison in "pentagon of stressors" domains disclosed that major stress scores were reported in "academic performance", and "workload". "Academic performance" being the highest stress domain for final year, similar to results of previous studies.^{15,19,32} An Egyptian study reported academic pressures as second greatest stressful domain.³³ Other studies reported it as either the stressful³³ or incredibly stressful domain.^{4,20} First year students in present study perceived workload as the highest stressor, in contrast to another study which reported that the senior years were more stressed with workload.³³ The clinical factors domain was third highest in present study, in contrast a West-Indian study found that this domain was most stressful.¹⁹ For clinical year students of this study the stress related to the "personal factors" was higher, this result is supported by another study done in Egypt³³ but is opposed by another study which reported that all classes were highly stressed by "personal factors".³⁴ Third year perceived "Educational environment" as most stressful domain, this result is endorsed by another study.¹⁹ Reason could be the shift to

clinical situations, where students are not only assigned theoretical assignments, they also are required to work with teaching and support staff, and patients while practically performing on real patients.

Students require protected time to relax, identification of the stressors will help formulating strategies to prevent stress build up and its negative effects. Formal student support programs including counselling cells and mentor-mentee programs can contribute to this and ensure an environment which reduces stress and promotes student well-being. The transitional phase of preclinical to clinical, needs to be addressed to support students for better self and patient management.

Inclusion of only one dental college along with not exploring effect on stress due to student's personality traits were limitation of this study. Future studies need to be designed to conduct a comprehensive research involving multiple institutes to report more remarkable findings at national level. Student's individual personalities should be considered in future studies on annual performance along with effect of implementation of stress coping programs.

CONCLUSION

Syllabus load, followed by less relaxation time and fearing to fail were most stressful factors reported by the undergraduate dental students. More stress was reported by female students, those living at home and students with a background of A-levels compared to their counterparts. Academic performance is the most stressful of the five stress domains for students of all classes. Third-year BDS was the most stressed class. The study indicates that dentistry is stressful therefore dental students require training for stress coping. Recognition of stressors, awareness, student counselling, mentor-mentee programs need to be provided in institutes to help improve student wellbeing.

ACKNOWLEDGMENT

The authors are grateful to the students who participated in the study and the administration if the dental section who supported the research.

CONFLICT OF INTEREST

None declared.

GRANT SUPPORT AND FINANCIAL DISCLOSURE

Nil.

REFERENCES

- Cool, Zappetti D. The physiology of stress. In Medical Student Well-Being (First edition), Zappetti D., Avery J. (eds), Springer Nature; 2019. P. 1-15.
https://doi.org/10.1007/978-3-030-16558-1_1
- Ersan N, Dölekoğlu S, Fişekçi E, İlgüç M, Oktay ?. Perceived sources and levels of stress, general self-efficacy and coping strategies in preclinical dental students. Psychology, health & medicine. 2018;28;23:567-77.
<https://doi.org/10.1080/13548506.2017.1384844>
- Abu-Ghazaleh SB, Sonbol HN, Rajab LD. A longitudinal study of psychological stress among undergraduate dental students at the University of Jordan. BMC Med Edu. 2016;16:90.
<https://doi.org/10.1186/s12909-016-0612-6>
- Al-Sowayh ZH. Academic distress, perceived stress and coping strategies among dental students in Saudi Arabia. Saudi Dent J. 2013;25:97-105.
<https://doi.org/10.1016/j.sdentj.2013.05.002>
- Polychronopoulou A, Divaris K. Dental students' perceived sources of stress: a multi-country study. J Dent Edu. 2009;73:631-9.
<https://doi.org/10.1002/j.0022-0337.2009.73.5.tb04738.x>
- Shadman N, Raoof M, Amanpour S, Mahdian M, Haghani J, Parizi MT. Stress, Anxiety, and Depression and Their Related Factors Among Dental Students: A Cross-Sectional Study from Southeast of Iran. Strides in Development of Medical Education. 2019;16(1).
<https://doi.org/10.5812/sdme.74295>
- Basudan S, Binanzan N, Alhassan A. Depression, anxiety and stress in dental students. International J Med Edu. 2017;8:179.
<https://doi.org/10.5116%2Fijme.5910.b961>
- Acharya S. Factors affecting stress among Indian dental students. Journal of dental education. 2003;67:1140-8.
<https://doi.org/10.1002/j.0022-0337.2003.67.10.tb03707.x>
- Westerman GH, Grandy TG, Ocanto RA, Erskine CG. Perceived sources of stress in the dental school environment. J Dent Edu. 1993;57:225-31.
<https://doi.org/10.1002/j.0022-0337.1993.57.3.tb02732.x>
- Muniz FW, de Oliveira MB, Barros ID, de Oliveira PM, Rodrigues LK, de Sousa Carvalho R. Stressors, psychological well-being, and overall health amongst students from public and private dental schools. Braz J Oral Sci. 2019:e181210-.
<https://doi.org/10.20396/bjos.v17i0.8654216>
- Garbee JW. Sources of stress in the dental school environment. LDA journal. 1981;39:9-14.
- Kitaoka-Higashiguchi K, Nakagawa H, Morikawa Y, Ishizaki M, Miura K, Naruse Y, Kido T, Higashiyama M. Construct validity of the Maslach Burnout Inventory? General Survey. Stress and Health. 2004;20:255-60.
<https://doi.org/10.1002/smi.1030>
- Pöhlmann K, Jonas I, Ruf S, Harzer W. Stress, burnout and health in the clinical period of dental education. European J Dent Edu. 2005;9:78-84.
<https://doi.org/10.1111/j.1600-0579.2004.00359.x>
- Elani HW, Allison PJ, Kumar RA, Mancini L, Lambrou A, Bedos C. A systematic review of stress in dental students. J Dent Edu. 2014 ;78:226-42.
<https://doi.org/10.1002/j.0022-0337.2014.78.2.tb05673.x>
- Murphy RJ, Gray SA, Sterling G, Reeves K, DuCette J. A comparative study of professional student stress. J Dent Edu. 2009;73:328-37.
<https://doi.org/10.1002/j.0022-0337.2009.73.3.tb04705.x>
- Tangade PS, Mathur A, Gupta R, Chaudhary S. Assessment of stress level among dental school students: an Indian outlook. Dental Res J. 2011;8:95.
- Al-Sowayh ZH, Alfadley AA, Al-Saif MI, Al-Wadei SH. Perceived causes of stress among Saudi dental students. King Saud University J Dent Sci. 2013;4:7-15.
<https://doi.org/10.1016/j.ksujds.2012.11.002>
- Ishaque MY, Farid H, Yasmeen S. Perceived causes of stress among dental undergraduates at Army Medical College, Rawalpindi. Pak Oral Dent J. 2015;35.
- Naidu RS, Adams JS, Simeon D, Persad S. Sources of stress and psychological disturbance among dental students in the West Indies. J Dent Edu. 2002;66:1021-30.
<https://doi.org/10.1002/j.0022-0337.2002.66.9.tb03569.x>
- Babar MG, Hasan SS, Ooi YJ, Ahmed SI, Wong PS, Ahmad SF, Mnm-Rosdy NM, Malik NA. Perceived sources of stress among Malaysian dental students. Int J Med Edu. 2015;6:56.
<https://dx.doi.org/10.5116%2Fijme.5521.3b2d>
- Hill MR, Goicochea S, Merlo LJ. In their own words: stressors facing medical students in the millennial generation. Medical Edu online. 2018;23:1530558.
<https://doi.org/10.1080/10872981.2018.1530558>
- Melaku L, Mossie A, Negash A. Stress among medical students and its association with substance use and academic performance. J Biomed Edu. 2015;2015.
<https://doi.org/10.1155/2015/149509>
- Garett R, Liu S, Young SD. A longitudinal analysis of stress among incoming college freshmen. J Am Coll Health. 2017;65:331-8.
<https://doi.org/10.1080/07448481.2017.1312413>
- Peker I, Alkurt MT, Usta MG, Turkbay T. The evaluation of perceived sources of stress and stress levels among Turkish dental students. Int Dent J. 2009;59:103-11.
https://doi.org/10.1922/IDJ_2010Peker09
- Bhavani Nivetha M, Ahmed M, Prashantha B. Perceived stress and source of stress among undergraduate medical students of

Government Medical College, Mysore. *Int J Community Medicine and Public Health*. 2018;5:3513.

<http://dx.doi.org/10.18203/2394-6040.ijcmph20183090>

26. Bergmann C, Muth T, Loerbroeks A. Medical students' perceptions of stress due to academic studies and its interrelationships with other domains of life: a qualitative study. *Med Edu Online*. 2019;24:1603526. <https://doi.org/10.1080/10872981.2019.1603526>

27. Pau A, Rowland ML, Naidoo S, AbdulKadir R, Makrynika E, Moraru R, Huang B, Croucher R. Emotional intelligence and perceived stress in dental undergraduates: a multinational survey. *J Dent Edu*. 2007;71:197-204. <https://doi.org/10.1002/j.0022-0337.2007.71.2.tb04266.x>

28. Turner J, Bartlett D, Andiappan M, Cabot L. Students' perceived stress and perception of barriers to effective study: impact on academic performance in examinations. *Brit Dent J*. 2015;219:453.

29. Khan, Nazeer & Sajjad, Ali & Khan, Aisha & Khan, Ruba & Qurashi, Saba. (2015). Effect of the schooling system and tuition fees on academic performance of medical college students. *Journal of Contemporary Medical Education*. <https://doi.org/10.5455/jcme.20141122080621>

30. Al-Saleh SA, Al-Madi EM, Al-Angari NS, Al-Shehri HA, Shukri MM. Survey of perceived stress-inducing problems among dental students, Saudi Arabia. *Saudi Dental J*. 2010;22:83-8. <https://doi.org/10.1016/j.sdentj.2010.02.007>

31. Manivasakan S, Raman SK, Devy AS, Saravanakumar R. The clinical dental undergraduate's perception of stress origin in India: A cross-sectional study. *J Natural Sci, Biology and Medicine*. 2018;9:197. https://doi.org/10.4103/jnsbm.JNSBM_218_17

32. Muirhead V, Locker D. Canadian dental students' perceptions of stress and social support. *Eur J Dent Edu*. 2008;12:144-48. <https://doi.org/10.1111/j.1600-0579.2008.00512.x>

33. Sedky NA. Perceived sources of stress among junior & mid-senior Egyptian dental students. *Int J Health Sci*. 2012;6:141. <https://dx.doi.org/10.12816%2F0005990>

34. Kumar VP, Dodamani A, Kerudi V, Shirahatti R, Telka S. Perceived sources of stress among Indian dental students. *J Ind Assoc Public Health Dentistry*. 2011;9:171.