

Perceived Stress among Dental Students to the Course and Curriculum in Bhopal City - A Questionnaire Study

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Abstract

Background: The curriculum of a dental undergraduate course is rigorous and demanding, and it can be challenging to balance the academic workload with clinical work and personal life. A high prevalence of psychological stress in undergraduate dental students has been witnessed. The present study was conducted to evaluate, compare, and document various factors associated with perceived stress based on course and curriculum among the undergraduate dental students of Bhopal city. **Materials and Methods:** An observational, cross-sectional, questionnaire-based study was conducted among 390 dental students using the dental environmental stress (DES) questionnaire and the validated Depression, Anxiety and Stress Scale (DASS-21). SPSS version 25 was used for statistical analysis. Variables were compared using mean, standard deviation, and independent sample t-test. **Results:** The respondents' average age was 24.52 ± 2.63 years. The highest stress for the dental environment (DES) was found in clinical group of students with a mean of 2.7 ± 0.18 , while it was 2.06 ± 0.12 in the pre-clinical students, which was statistically significant at $P = 0.00^*$. Overall score of DES was 2.99 ± 0.39 . Overall DASS 21 when assessed was 15.75 ± 1.05 in pre-clinical group while it was 18.19 ± 0.93 in clinical group but still non-significant at $P = 0.07$. **Conclusion:** Introduction of stress coping measures in dental education system can immensely alleviate the stress levels among dental students and can mold them into healthy, responsible, and independent professionals.

Keywords: Dental students, Stress level, Stress sources

INTRODUCTION

Stress is a natural part of day-to-day life, but although some degrees of stress can take on a protective adaptive role and is considered good for you, chronic stress could result in serious conditions such as anxiety, depression, and even burnout.^[1] The symptoms associated with stress can be categorized within three main groups: Altered behavior, psychological reactions, and physiological reactions.^[2]

Stress levels are found to be higher among health-care students compared to the general population,^[3] and dentistry students are even more likely to experience stress compared to other fields of medical study.^[4] The dentistry curriculum demands that students obtain theoretical knowledge and clinical practice skills in parallel, including patient care and understanding.^[3] More so, during their clinical practice, students are required to perform irreversible procedures, often on fearful patients. All these factors help illustrate why dental education is considered such a stressful environment and coincides with sources of stress identified and discussed in epidemiological studies.^[4,5] The two most common means of evaluation of stress among

undergraduates in dentistry are the Dental Environmental Stress (DES) questionnaire and the Perceived Stress Scale (PSS).^[6] It is worth noting that students from different sociodemographic backgrounds and socioeconomic positions might perceive stressful situations and stress factors differently.

Stress among undergraduate dental students can have a significant impact on their mental and physical health, academic performance, and overall quality of life. Stress can lead to burnout, a state of emotional exhaustion, and reduced professional efficacy. Students experiencing stress may turn to substance abuse such as alcohol or drugs as a coping mechanism, which can lead to addiction and further exacerbate stress-related problems.

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Literature regarding this topic is not seen in this particular region of the country. Hence, the present study was undertaken to assess perceived stress among dental students to the course and curriculum in Bhopal city. The study hypothesized that there is a difference in stress perception to course and curriculum among pre-clinical and clinical groups of undergraduate dental students.

MATERIALS AND METHODS

Study design

The present study was a questionnaire-based assessment of cross-sectional design evaluating the effect of stress perception among undergraduate dental students of Bhopal city.

Study population

Undergraduate dental students of both genders were recruited for the study. Study subjects were taken from all the dental colleges of Bhopal city.

Study period

The study was done from 01/01/2023 to 31/01/2023 for a period of 1 month.

Ethical consent

Informed consent of all participants was obtained after explaining the purpose of the study. Permission to carry out the study was obtained by Institutional Ethical Committee of Bhabha College of Dental Sciences, Bhopal (Ref. no. BCDS/DEAN/2022/3084/A). Confidentiality of every participant was ensured.

Sample size

The study sample comprised of 390 dental students who fulfilled the eligibility criteria.

Inclusion criteria

1. Dental students from 1st year to internship of both genders.
2. Those who consented for the study.

Exclusion criteria

1. Those not consented.
2. Students with known systemic conditions or who were on medications for any systemic illness.

Examiner

A single investigator conducted the study to avoid examiner bias.

Questionnaire employed

- a. To evaluate psychological setup among the dental students, a Dental Environmental Stress (DES) questionnaire was handed out. Garbee developed and validated the questionnaire in 1980.^[6] The DES consists of 38 items describing stressors specifically related to pre-doctoral dental training. The response to each item is rated on a four-point scale (1 = not stressful, 2 = slightly stressful, 3 = moderately stressful, 4 = very stressful) with a fifth possible response of “not pertinent.” The mean

score is calculated for each item of the DES to evaluate stress levels for each stressor; a total score can also be calculated by summing the responses from all items. The measurement tool, DES, was slightly modified to be suitable for the local culture, dental environment, and curriculum.

- b. The DASS-21 (Lovibond, S.H. & Lovibond, P.F., 1995),^[7] a shorter version of the full survey (DASS-42), was adopted for stress assessment. It consists of three self-reporting scales constructed to measure the negative emotional states of depression, anxiety, and stress. Each of these contained 7 items. Participants responded using a severity and frequency scale to rate the extent to which they had experienced each item over the past week: 0 = did not apply to me at all, 1 = applied to me to some degree, or some of the time, 2 = applied to me to a considerable degree, or a good part of the time, and 3 = applied to me very much, or most of the time. Separate scores for depression, anxiety, and stress were calculated by summing the scores for each. These were then multiplied by 2 to fit with the DASS-42 scale.

Data analysis

The data obtained was transferred to spread sheets and analyzed using SPSS version 25.0. The results are presented as means $\pm$ standard deviation, percentages, and tables. Kolmogorov-Smirnov Z-test was used to check for the normality of the data collected. Independent sample t-test was applied to find significant difference between clinical and pre-clinical groups to stress scales evaluated. A *P* value of 0.05 or less was considered as statistically significant.

RESULTS

279 females and 111 males participated in the study, showing a clear female predilection. The respondents' average age was 24.52 ± 2.63 years (ranging from 19 to 27 years old). First and 2nd year dental students were categorized into pre-clinical group, while third and final years were grouped in clinical group. The final year students' mean DES score came out to be higher as compared to other years and was 2.74 ± 0.22 , whereas interns' score mean was 2.41 ± 0.23 . The 3rd years experienced the least environmental stress.

Table 1 reveals that living accommodation, personal factors domain showed significant differences between pre-clinical and clinical group. The scores of living accommodation were highest in the pre-clinical section which could be due to change over from formal education to professional one. Clinical section experienced greater stress in personal factor domain. No difference was noted in educational environment domain between the pre-clinical and clinical groups.

Table 2 signifies that the highest stress for the dental environment was found in clinical group of students with a mean of 2.71 ± 0.18 , while it was 2.06 ± 0.12 in the pre-clinical students, which was statistically significant at $p=0.00^*$. This shows clearly that students had greater stress when they entered

Table 1: Dental environmental stress score in each domain between preclinical and clinical groups of students

Groups	Mean $\pm$ SD		t-statistic	P
	Preclinical (n=210)	Clinical (n=180)		
Living accommodation				
Moving away from home	2.17 $\pm$ 0.64	1.60 $\pm$ 0.49	94.07	0.00*
Environment in which to study	2.27 $\pm$ 0.44	1.60 $\pm$ 0.80	106.96	0.00*
Lack of home atmosphere	2.13 $\pm$ 0.67	1.40 $\pm$ 0.49	147.12	0.00*
Other problems with accommodation	2.43 $\pm$ 0.88	1.60 $\pm$ 0.49	126.30	0.00*
Personal factors				
Making friends	1.83 $\pm$ 0.64	2.60 $\pm$ 0.49	172.20	0.00*
Financial responsibilities	1.70 $\pm$ 0.69	3.00 $\pm$ 0.63	369.29	0.00*
Personal physical health	2.00 $\pm$ 0.52	3.00 $\pm$ 0.90	188.03	0.00*
Necessity to postpone marriage	1.70 $\pm$ 0.69	2.80 $\pm$ 0.40	353.01	0.00*
Lack of time for relaxation	1.70 $\pm$ 0.46	3.20 $\pm$ 0.40	1160.68	0.00*
Dependencies (for example, drugs, alcohol)	1.30 $\pm$ 0.46	2.51 $\pm$ 1.07	221.46	0.00*
Educational environment				
Approachability of staff	2.80 $\pm$ 0.72	2.61 $\pm$ 0.66	7.62	0.006*
Rules and regulations of the dental school	3.39 $\pm$ 0.70	3.32 $\pm$ 0.74	1.02	0.31 (NS)
Discrimination due to race, nationality, gender or social class	1.59 $\pm$ 0.58	1.72 $\pm$ 0.64	4.49	0.04*
Difficulty of course work	3.12 $\pm$ 0.76	3.13 $\pm$ 0.72	0.02	0.90 (NS)
Fear of failing course or year	3.17 $\pm$ 0.73	3.09 $\pm$ 0.76	1.06	0.30 (NS)
Uncertainty about dental career	3.40 $\pm$ 0.66	3.38 $\pm$ 0.63	0.12	0.73 (NS)
Examinations	3.26 $\pm$ 0.61	3.26 $\pm$ 0.61	0.00	0.99 (NS)
Transition from preclinical to clinical	2.83 $\pm$ 0.91	2.83 $\pm$ 0.91	0.00	0.96 (NS)
Completing clinical requirements	3.06 $\pm$ 0.79	3.06 $\pm$ 0.79	0.00	0.98 (NS)
Patient management	3.14 $\pm$ 0.87	3.15 $\pm$ 0.86	0.01	0.94 (NS)

*Significant. NS: Not significant

Table 2: Dental environmental stress score in preclinical and clinical groups of study respondents

Variables	Mean $\pm$ SD	t-statistic	P
Preclinical	2.06 $\pm$ 0.12	-42.57	0.00*
Clinical	2.71 $\pm$ 0.18		

*Significant, NS: Not significant, SD: Standard deviation

clinics. Overall score of DES in the current study population was 2.99 ± 0.39 as seen in Table 3.

Table 4 depicts overall DASS 21 when assessed was 15.75 ± 1.05 in pre-clinical group while it was 18.19 ± 0.93 in clinical group, but still non-significant at $P = 0.07$.

DISCUSSION

Dental education has shown to be very stressful for students as reported by large number of studies. The findings are consistent across different countries, universities, and curriculums.^[8,9] This finding is supported by earlier literature, which also suggested that clinical training issues impose a highest level of stress in dental students.^[10] This stress could be because the dental students are required to complete a certain quota of cases to be eligible to appear in the final examination. Absence of early clinical exposure also triggers an anticipatory stress reaction in regard to the upcoming encounter with the patients and using their clinical skills to treat the patient at an early stage. This finding is in agreement with the findings of

Table 3: Overall dental environmental stress score among the dental students

DES	n	Minimum	Maximum	Mean $\pm$ SD
Overall score	390	1.96	3.82	2.99 $\pm$ 0.39

DES: Dental environmental stress, SD: Standard deviation

Table 4: Depression, Anxiety and Stress Scale-21 in preclinical and clinical groups of study respondents

DASS-21	Mean $\pm$ SD	t-statistic	P
Preclinical	15.75 $\pm$ 1.05	0.84	0.07 (NS)
Clinical	18.19 $\pm$ 0.93		

*Significant. NS: Not significant, SD: Standard deviation

some previous studies.^[5] Attempt should be made to include soft skills required to handle patient as an integral part of the curriculum.

Overall DES score in our study was 2.99 ± 0.39 which is in concordance with the studies of Abu-Ghazaleh *et al.*^[11] and Murphy *et al.*^[4] who have reported the overall DES among Jordanian (2.4 ± 0.50 point) and American (2.39 ± 0.40 point) dental students, respectively. These minor differences in results might be attributed to the difference in teaching curricula and/or demographic status. In general, stress perceived by dental students is variable in different countries and even within a country.

Most of the previous research regarding sources of stress described sources at one time point, whereas very few longitudinal studies examined changes in those sources over time. Polychronopoulou and Divaris surveyed 109 Greek dental students through their 5-year curriculum in an attempt to understand how sources of stress evolve throughout the curriculum.^[12] Studying the learning environment is important in improving the quality of an educational program.^[13] Students' stress from workload and clinical training increased as they progressed in their curriculum, while stress from faculty and administration factors decreased.

In academic performance-related domain, examinations, grade stress along with the fear of failing was reported as one of the major stressors reported by both the groups of students. Similar findings were reported in other studies conducted in some other part of the world.^[14,15] This may be due to the fact that the dental curriculum requires lots of study and students feel overloaded by high academic demands.

The examination and grade-related stress were cited as major stressors in the students regarding academic performance-related stresses in the study. Thus, there is an urgent need to analyze and improve our evaluation system. Insecurity regarding future professional career was also high among both the groups in the present study. This is in agreement with previous literature.^[9,16] The reason may be that the major issue affecting the present dental education system in India is heavy competition to gain a job following graduation or to achieve admission to post-graduation course.

In general, students in clinical years scored higher levels of stress compared to students in pre-clinical years. This result is in concordance with other cross-sectional studies conducted among dental students.^[13,17,18] This difference is mostly attributed to logical differences in the following main domains: "Patients treatment" and "Clinical training." Pre-clinical students had not yet been exposed to clinical training or patient treatment. In general, responsibility toward their patients, proximity to graduation, and thinking about their future plans and goals are the factors affecting work-life balance among male and female dental students.

According to a study of West Indies,^[19] the stress levels increase over the 5 years of a dentistry degree. The two 1st years of pre-clinical courses prove to be given the mildest rates, with the ratings developing to moderate and high during the years with introduction to clinical courses.

An important limitation of the current study is its cross-sectional design. Consequently, the findings may not portray the cause-and-effect relationship between the assessed independent variables and the stress domains of DES. Another limitation is that it was carried out in dental colleges of one city. In this way, the results might have been different if more dental colleges had been included. Hence, the authors suggest that a comprehensive study with a longitudinal design should be performed in future to report more remarkable findings.^[20,21]

The main limitation of this study is the generalizability as the results may differ with varying sociocultural contexts. However, this study identified the potential stressors among undergraduate dental students, which paves way for further research to investigate the impact of stress on personality traits, behavior, performance, and its changing trends. Future research needs to consider the use of a more precise measure to evaluate the stress level to aid in better understanding of dental students' experience and accordingly improving their learning environment.

FUTURE RECOMMENDATIONS

- Parents should be counseled prior related to the ill effects of pressuring their children in joining an educational program and for academic excellence.
- The factors identified are needed to be tackled by incorporating the stress-coping measures, to reduce the stress, as well as to bring out the best performance from students in a healthy and stress-free environment. It is necessary to include subjects such as stress management, practice management, and communication skills.
- Advocating health promotion policies to ensure a future supply of effective dentists.
- A public health dentist can be assigned as an academic advisor to each student throughout his or her education.
- Also, can counsel and mold students psychologically to tackle the stress levels by making them aware of the stress consequences such as psychological disorders and help them to cope up with the problems.

CONCLUSION

Effective assistance from teaching staff, institutional administrators, and families is essential to cope up with the stress in dental students. Measures such as changes in length and type of curriculum, small group assignments, student-centered methodologies, reduction of educational costs, individual counseling, formative assessment of student rather than summative assessment, and faculty-incorporated advising systems should be implemented.

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