

Perceived sources of stress amongst final year dental under graduate students in a dental teaching institution at Bangalore, India: A cross sectional study

Harikiran AG, Srinagesh J, Nagesh KS¹, Sajudeen N

Department of Public Health Dentistry and ¹Oral Medicine & Radiology, D A P M R V Dental College and Hospital, Bangalore, India

ABSTRACT

Background: Dental schools are known to be highly demanding and stressful learning environments. Dentistry involves an acquisition of required academic, clinical and interpersonal skills during the course of learning. Practicing dentistry requires clinical skills and patient management skills, which also add to the stress perceived by the students. Identifying sources of stress represents the crucial first step towards advocating policy changes and strategies to alleviate the stressors and enhance students' stress coping skills. The aim of this study was to identify self-reported sources of the stress among the final year [4th year] dental undergraduate students in a Dental Teaching Institution in Bangalore, India.

Materials and Methods: A 38 items, 4-point Likert Scale item modified Dental Environmental Stress (DES) questionnaire, addressing 5 stressor domains (living accommodation, interpersonal relationships, academics, clinical skills and miscellaneous) was administered to all final year undergraduate dental students of the Institution. Items and domains were considered to be perceived as "stressful", when students classified them as 'slightly', 'moderately' or 'severely stressful'. Descriptive and bivariate analyzes based on chi square tests were performed.

Results: Out of the 38 items, 19 items were reported to be "stressful" by >70% of the students. Of these, examinations, difficulty in managing difficult cases, lack of patient co-operation, difficulty and amount of course work and completing clinical requirements were reported to be "stressful" by >85% of the students. Personal physical health, difficulty in making friends, staying with roommates, narcotic substance dependencies were least commonly reported to be "stressful".

Discussion and Conclusion: The stress provoking factors among >70% of the students are quite similar to those reported by the researchers' worldwide. Curricular changes, student support mechanisms at departmental/institutional level with appropriate policy changes need to be considered to assist the students in coping with identified stressors.

Key words: Academics, Bangalore, clinical skills, dental undergraduates, India, stress sources

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According to a 2008 report of the Global Congress in Dental Education, "dental education is regarded as a complex, demanding and often stressful pedagogical exposure. It involves an acquisition of required academic, clinical and interpersonal skills during the course of learning".^[1]

Address for correspondence:
Dr. Harikiran Arkalgud Govindaraju
E-mail: docharikiran@yahoo.com

Practicing dentistry requires clinical skills and patient management skills, characteristics that also add to the stress perceived by the students.^[1] The academic demands, manual dexterity and clinical management skill requirements subject the dental students to stresses which are quite different from the other students. The sources of stress may be interpersonal, intrapersonal, academic or environmental.^[2]

Some common sources of the stress include completing graduation requirements, achieving good examination grades, fear of failing the course, approachability of the staff, patients' being late or not showing up for their appointments and fear of facing parents after failure. Other causes are change in sleeping habits, vacations/breaks, change in eating habits, an increased work load and new responsibilities. Some students may be stressed about finding the right job/post after graduating or about finding the right life partner.

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Academic sources of the stress normally include competition among peers, requirement of high marks, approaching examinations etc.^[1-13]

Studies conducted across the world have shown that examinations and grades are the most highly ranked sources of the stress. Other causes may be class work overload, clinical training difficulties, self-efficacy beliefs, atmosphere created by clinical faculty, financial responsibilities and insecurity about the professional future.^[12]

Asian students have been reported to be mainly concerned about completing the graduation requirements. Competition from peers, unhealthy perfectionism on the part of teachers, failing in examinations and the patients behavior were some other reported stressors.^[3,11,13]

Two of the studies conducted in India have reported the most common stressors to be fear of facing parents after failure, fully loaded day, and the fear of failing course or year. Students, whose first choice of admission was dentistry, experienced less stress in comparison to the others. Also, the students who joined dentistry due to parental pressure, showed greater stress than those who joined of their own accord.^[14,15] Receiving criticism from supervisors about academic or clinical work, amount of cheating in dental faculty, rules and regulations of the faculty and fear of an unemployment after graduation were some of the other stressors identified in the Indian study at Manipal.^[15]

There is an evidence from longitudinal studies that, perceived stress corresponds with transitions from entry- to higher-level stages in a dental students' course of studying.^[16] In fact, a study conducted in USA identified the higher prevalence of stress among the dental undergraduates in the clinical years compared to those in the non-clinical years.^[17] Undergraduate final year [4th year] dental students in India, take up exams in 7 clinical subjects at the end of final year [Revised Scheme 2: Dental Council of India guidelines]. Final year is often perceived as the toughest year because the students have to cope with an increase in academic and clinical work load. Some common stressors found in the 1st 3 years of the undergraduate course may have been resolved and some may have become more pronounced.

Perception of the stress is frequently influenced by the sociocultural factors; the results of studies in one region cannot necessarily be generalized to the others. Also, the stress experienced by the students can exhibit variation between clinical and non-clinical years as well as be influenced by the institutional policies, student-faculty relationship etc.^[12]

Hence, it is important to identify the potential sources of stress for each undergraduate year in the dental institution, and institute the requisite institutional changes to enhance the stress coping skills of the students in that institution. This

study was conducted to assess the perceived sources of the stress among the final year undergraduate dental students in a dental teaching institution at Bangalore.

MATERIALS AND METHODS

All 44 final year dental undergraduate students participated voluntarily in the study. In October 2010, data was collected in two days in a class room setting by using pen and printed Dental Environment Stress (DES) questionnaire. Absentees on the first day were requested to be present on the second day.

The DES questionnaire is a close-ended questionnaire, containing 38 questions pertaining to potential stressor factors like living accommodation, interpersonal relationship, academic performance, clinical skills and miscellaneous factors.^[18] This questionnaire has been modified and used in several studies across the world.^[2,3,6-10,12-16,19] Data were also collected with respect to their accommodation and home town. The participants assessed the stressors on a 4-point Likert scale ranked as, 1 Not Stressful, 2 Slightly Stressful, 3 Moderately Stressful, 4 Severely Stressful. Categories of slightly stressful, moderately stressful and severely stressful were combined to obtain the overall percentage of the students who felt certain factors were stressful.

An ethical clearance was obtained from the Institutional Review Board. Informed consent was obtained from all the participants in the study. The confidentiality of the study participants was ensured by anonymous submissions. Data were analyzed using SPSS version 10 for descriptive statistics and frequencies. Chi -square tests with a $P < 0.05$ threshold were used to assess whether the place of accommodation and gender influenced the stress perceived by the students.

RESULTS

Out of the 44 final year students, 38 students participated in the study. [response rate: 86%] They were in the age group of 20-23 years with the mean age being 21.2 ± 0.7 . Of total, 26.4% (10 students) were male and 73.6% (28 students) were female. 81.5% ($N = 31$) students reported places other than Bangalore as their home town; of those, 93.5% ($N = 29$) students were hostelites. The difference in the stress perception between males and females was not statistically significant ($P > 0.05$). Place of residence had a statistically significant influence on stress. Hostelites experienced more stress compared to those who stayed at home [Table 1].

While calculating proportions of items been considered as "stressful" in a dichotomous manner, the degree of the perceived stress was ignored at this stage. Out of the 38 items, 19 were reported to be "stressful" by >70% of the

students [Table 1]. As an example, 85% or more students reported examinations (97%), shortage of allocated clinical time (97%), difficulty in managing difficult cases (88%), lack of patient co-operation (88%), difficulty and amount of course work (86%), and completing clinical requirements (85%) to be “stressful” [Table 1].

Living accommodation was assessed with 5 questions. Lack of home atmosphere was reported to be stressful by 75.8% of the students followed by the lack of recreation (72.7%). Hostelites were significantly more stressed by these factors than those students staying at home ($P < 0.04$). Staying with roommates was least stressful (66.7%) [Table 2].

Interpersonal relationship was the least stressful of all the categories. Making friends was reported to be non-stressful by 81.8% of the students, while social demands of family and society expectations was stressful to 57.6% of the students [Table 2].

Among academic concerns (12 questions), 11 queries were reported to be stressful by >70% of the students. Examinations topped the list with 97% of the students reporting it as stressful followed by amount and difficulty of coursework (85% and 86%). Lack of input in decision

making and receiving criticism about academic and clinical work (82%) were other stressors frequently reported. Expectation versus reality of the dental college (79%), rules and regulations, competition for grades, fear of catching up if left behind and an uncertainty of the future (76%) were other stressors reported. Communicability and approachability of the staff was reported to be non-stressful by 30.3% of the students. A significant 48.5% of students reported that there was no stress because of racial or gender discrimination [Table 2].

Clinical requirements (9 questions) were reported to be stressful by >70% of the participants. Shortage of allocated clinical time (97%), difficulty in managing difficult cases, lack of co-operation by the patient (88%) were the top 3 stressors in this category. Transition from preclinical to clinical work was reported to be non-stressful by 37% of the students [Table 2].

Among the other factors, having reduced holidays and an inadequate time for relaxation (76%) was stressful, while financial problems, personal physical health, necessity to delay personal milestones like marriage, children, dependencies on alcohol, drugs etc. were reported to be least stressful [Table 2].

Table 1: Perceived sources of stress as reported by >70% of the final year under graduation dental students in the dental teaching institution

Q No	Questions	% of students reporting as stressful
29.	Examinations	97
34	Difficulty in managing difficult cases	87.9
37	Lack of co-operation by patient	87.9
25	Difficulty of coursework	85.8
33	Completing clinical requirements	84.8
24	Amount of assigned coursework	84.8
23	Lack of input in decision making process in college	81.8
35	Differences in opinion between the clinical staff concerning treatment/s	81.8
20	Receiving criticism about an academic or clinical work	81.8
3	Lack of home atmosphere	75.8
14	Inadequate time for relaxation	75.8
15	Having reduced holidays	75.8
18	Expectation versus reality of dental college	75.8
26	Fear of being unable to catch up if falling behind	75.8
27	Competition for grades	75.8
28	Uncertainty of the dental career (employment, PG Course, clinic set up etc.	75.8
38	Lack of confidence in own clinical decision making	75.8
5	Other problems with accommodation like lack of recreation	72.7
32	Learning precision and manual skills	72.7

DISCUSSION

This study was conducted to assess the different sources of the stress as perceived by the final year dental undergraduate students in Dental Teaching Institution at Bangalore. The Curriculum being followed is as per the Dental Council of India guidelines. The syllabus and examination scheme is as per the BDS Undergraduate Ordinance of the Rajiv Gandhi University of Health Sciences to which all the dental teaching institutions of Karnataka are affiliated. The clinical quota requirements are as per the individual department specifications, which in turn are dependent on the hospital patient inflow. Undergraduate dental students in the final year are subjected to increased workload, because they have to take up exams in seven clinical subjects at the end of the year (Revised Scheme 2- Dental Council of India Guidelines), while the students in the first three years of the undergraduate program have to appear for 4 exams only. Thus, the stress levels might be high among the final year undergraduate students, a hypothesis, which needs to be further explored. In India, there has been an increase in the number of women taking up dentistry.^[20] This has been identified in the present study as well with 73% of the study participants in the final year of under graduation being females. Differences in perceived sources of the stress between male and female students were found to be not statistically significant. This is in an agreement with the findings reported by Bradley *et al.*^[21] and Heath,^[4] but in contrast with a systematic review reported by Alzahem *et al.* in 2011.^[12] Whether this is a true finding or is it due

Table 2: Perceived sources of stress reported by the final year dental undergraduate students' w.r.t living accommodation, interpersonal relationship, academic skills, clinical skills and miscellaneous factors

Question No	Question	No answer (%)	Not stressful (%)	Slightly stressful (%)	Moderately stressful (%)	Severely stressful (%)	Stressful Yes (%)	Stressful No (%)
Category 1: Living accommodation								
1.	Moving away from home	0	36.4	24.2	21.2	18.2	63.6	36.4
2.	Accommodation is not appropriate environment for studying	3	36.4	15.2	42.4	3	63.6	36.4
3	Lack of home atmosphere*	0	24.2	36.4	18.2	21.2	75.8**	24.2
4	Staying with room mates	0	66.7	12.1	12.1	9.1	35.3	66.7
5	Other problems with accommodation like lack of recreation*	0	27.3	12.1	42.4	18.2	72.7**	27.3
Category 2: Interpersonal relationship								
6.	Difficulty in making friends	3	81.8	12.1	3	0	18.2	81.8***
8.	Relationship with opposite sex	3	57.6	18.2	3	18.2	42.4	57.6
12.	Social demands (family and society expectations)	3	42.4	33.3	18.2	3	57.6	42.4
13.	Conflict with spouse	21.2	60.6	3	9.1	6.1	39.4	60.6
16.	Fear of going out	3	69.7	24.2	3	0	30.2	69.7
Category 3: Academics								
18.	Expectation versus reality of dental college	3	18.2	33.3	18.2	27.3	78.8**	18.2
19.	Communicability and approachability of staff	0	30.3	33.3	24.2	12.1	69.6	30.3
20.	Receiving criticism about academic or clinical work	0	18.2	24.2	30.3	27.3	81.8**	18.2
21.	Rules and regulations of the college	0	24.2	30.3	24.2	21.2	75.8**	24.2
22.	Discrimination by gender, religion, social class, color	0	48.5	27.3	12.1	12.1	51.5	48.5
23.	Lack of input in decision making process in college	0	18.2	45.5	24.2	9.1	81.8**	18.2
24.	Amount of assigned coursework	0	15.2	36.4	33.3	21.2	84.8**	15.2
25.	Difficulty of coursework	0	15.2	33.3	24.2	15.2	85.8**	15.2
26.	Fear of being unable to catch up if falling behind *	0	24.2	24.2	27.3	12.1	75.8**	24.2
27.	Competition for grades	0	24.2	21.2	27.3	15.2	75.8**	24.2
28.	Uncertainty of the dental career (employment, PG course, clinic set up etc)	0	24.2	24.2	24.2	27.3	75.8**	24.2
29.	Examinations	0	3	21.2	33.3	42.4	97**	3
Category 4: Clinical skills								
30.	Concerns about manual dexterity*	0	30.3	24.2	39.4	6.1	69.7	30.3
31.	Transition from preclinical to clinical work	0	36.4	36.4	18.2	9.1	65.7	36.4
32.	Learning precision and manual skills*	3	24.2	48.4	21.2	3	72.7**	24.2
33.	Completing clinical requirements	3	12.1	33.3	24.2	27.3	84.8**	12.1
34.	Difficulty in managing difficult cases*	0	12.1	39.4	30.3	18.2	87.9**	12.1
35.	Differences in opinion between the clinical staff concerning treatment/s *	0	18.2	33.3	36.4	12.1	81.8**	18.2
36.	Shortage of allocated clinical time	0	3	30.3	39.4	27.3	97**	3
37.	Lack of co-operation by patient	0	12.1	39.4	27.3	21.2	87.9**	12.1
38.	Lack of confidence in own clinical decision making	0	24.2	54.5	18.2	3	75.8**	24.2
Category 5: Miscellaneous								
7.	Financial problems (food, clothes, fees etc...)	3	54.5	24.2	9.1	9.1	45.4	54.5
9.	Personal physical health (Chronic disease etc)	3	78.8	3	15.2	0	21.2	78.8***
10.	Necessity to postpone marriage *	9.1	75.8	6.1	9	0	24.3	75.8***
11.	Necessity to postpone children *	9.1	87.9	3	0	0	12.1	87.9***
14.	Inadequate time for relaxation	3	21.2	18.2	33.3	24.2	75.8**	24.2
15.	Having reduced holidays	3	21.2	9.1	33.3	33.3	75.8**	24.2
17.	Dependencies (alcohol, smoking, drugs etc)	0	87.9	6.1	0	6.1	12.2	87.9***

*-P < 0.05 for Place of residence with Hostelites experiencing more stress, **Factor reported to be stressful by >70% of the students, ***Factor reported to be not stressful by >70% of the students

to the sample being predominated by females, needs to be further explored.

In this study, all the stressful situations (be it slight, moderate or severe) were clubbed together to obtain a binomial variable regarding the presence or absence of the stress. Even if the "slightly stressful" situations are mainly due to the physiologic reasons, the same cannot be discounted. Stress as perceived by the student, irrespective of the degree of stress, does contribute to the overall stress.

Stressors associated with living accommodation were significantly experienced more by those living in hostels, rather than those at home or as paying guests. Stress was mainly due to the lack of recreation and home atmosphere. This suggests that the quality of living in hostels should be improved with adequate facilities for recreation being provided. Mentors and matrons should be appointed to make the students feel at home.

Dependencies on alcohol, drugs were reported to be non-stressful by 88% of the students. Necessity to postpone personal milestones like marriage and children was also not stressful, possibly due to the age group of the participants. Interpersonal relationship factors were among the least stress provoking factors suggesting that the interpersonal relationship skills of the students are fairly good. Communicability and approachability of the staff was also less stressful, suggesting that the students find it easier to communicate with the faculty in the Institution.

Examinations were reported to be stressful by an overwhelming 97% of the students. This is in an agreement with the studies reported from India and abroad.^[2-16,19] This suggests that the examinations and the other academic factors, which were reported to be stressful, are almost a universal phenomenon experienced by the dental undergraduate students around the world. While some stress is inherent in dental education and probably normal, this universal phenomenon may also be attributed to an academic pattern, that places emphasis on scoring the marks and passing the exams rather than on the process of actual learning.^[1,12,14,15] Thus, there is an urgent need to look into our system of student evaluation. Emphasis has to be shifted from quota completion and summative evaluation to formative evaluation and importance of quality over quantity.^[1,12,15,22]

Shortage of clinical time, completing clinical requirements, difficulty in managing difficult cases, difference of opinion between staff regarding clinical treatment were the other major stress inducing factors. According to Kumar *et al.*^[14] and Acharya,^[15] the "quota system" in education has been identified as being stressful in Indian studies. If the emphasis can be shifted from the quantity of cases being completed to the quality of cases being completed, it has the potential

to reduce the stress among the students. Furthermore, the soft skills required to handle a patient should also be an integral part of the curriculum. This would enhance the students' confidence and self-efficacy beliefs in handling the patients.^[1]

The stress causing factors reported by >85% of the students were mainly related to academic and clinical concerns. Examinations, competition for grades, fear of being unable to catch up, difficulty and amount of course work, an uncertainty of the future employment were reported as being stressful. Since it is impossible to do away with the existing gradation system due to Health University and Dental Council of India guidelines, it is imperative that the stress coping skills of the students be enhanced.

This study has identified the potential stressors among the final year dental undergraduate students in a dental teaching. The factors identified, need to be addressed by incorporating the stress coping measures, to reduce the possibilities of burn out, as well as, to bring out the best from the students in a healthy, stress-free environment. Changes in the curriculum and method of teaching, an emphasis on an active quality learning, modular teaching, formative assessment rather than only summative assessment, reduced emphasis on quota requirements have been suggested by academicians as measures to reduce the stress.^[1]

Further studies need to be conducted to assess the feasibility and efficacy of these stress coping measures for this cohort, in particular, and for all the dental students, in general.

CONCLUSION

Factors like examinations, amount of work and time available, an uncertainty of the future, academic and clinical concerns were the major stressors among the final year dental undergraduate students of Dental Teaching Institution in Bangalore, while interpersonal relationships, living accommodation and interactions with faculty were the least stressful. The stress experienced by the final year undergraduate students might probably be cohort specific or institution specific, therefore, this study's findings need to be further validated. It is important to understand the dynamics involved in the stress mechanism, to alleviate the identified sources and to enhance the stress coping skills. Curricular changes, student support mechanisms at departmental/institutional level with appropriate policy changes, mentorship programs etc. need to be considered, to assist the students in coping with identified stressors and to make learning a joyful rather than a laborious process.

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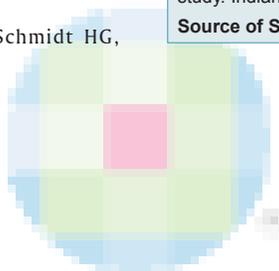
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