

# The Clinical Dental Undergraduate's Perception of Stress Origin in India: A Cross-Sectional Study

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## Abstract

**Purpose:** The current study aims to compare the stress level of the undergraduate clinical dental students' year wise in a dental college using modified dental environmental stress (DES) questionnaire and to identify the key contributing factors of stress for each year. **Methods:** Research hypothesis of the study is that the stress of the final year students will be more than others. The study followed cross-sectional observational study design. Total of 166 students (73 3<sup>rd</sup> years, 50 final years and 43 interns) from a private dental college in south India participated in the study. Modified DES Questionnaire was given in an electronic format and the data were collected. One way and two way ANOVA with *post hoc* analysis was used to calculate stress score. **Results:** The 3<sup>rd</sup> year students were significantly less stressed than their seniors. The final years and the interns had equal amounts of stress. The academic factors followed by patient and clinic responsibilities and professional identity were the key stress contributing factors for the final year students. Faculty relations and personal life issues were the least contributing factors for all the three batches. **Conclusion:** Revision of the redundant areas in curriculum, considerate changes in the clinical quota system, academic support system, guidance, and counseling for psychological well-being of the students are the need of the hour to decrease the stress in the clinical dental students.

**Keywords:** Academic stress, dental students, dental environmental stress questionnaire, stress perception

## INTRODUCTION

The stress is considered as a dynamic process that reflects the internal and external factors interacting with the individual characteristics and their environment. The relative balance between the perceived resources and the perceived demands contribute to identify the amount of stress experienced by an individual.<sup>[1]</sup> The mechanism of coping helps to maintain balance between these two. The person would land up in distress, when the perceived demands outweigh the resources. The process continues as a vicious cycle decreasing the productivity and coping skills and thereby leading to further increase in demands.<sup>[1]</sup>

In Indian educational scenario, academic performance of the students gets affected with increase in stress and anxiety. Academic performance is used as a measure of self-worth of students in India, unlike the Western countries wherein individual qualities and vocational abilities of the students are also deeply appreciated.<sup>[2]</sup> Hence, the decreased performance further adds to the stress and builds up like a vicious cycle.<sup>[3]</sup>

The previous studies had discussed that the students of health professions courses in India are more stressful than their counterparts of the same age group.<sup>[4,5]</sup> Although a certain level of stress contributes to growth, beyond a limit, it decreases the students' memory capacity and coping skills.<sup>[6]</sup> Studies had shown that reduced coping skills can present as physical symptoms to mental distress and eventual burnout in the students.<sup>[7-10]</sup>

As per the Indian dental education system, unlike the medical students, the dental students are expected to perform complete dental treatment procedures for the patients from the 3<sup>rd</sup> year onward, under expert supervision. The dental clinical undergraduates are hence in need of balancing their academics as well as the clinical skills apart from the other

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environmental factors. Environmental factors here refer to the students relationship with faculty members, the rules, and regulations of the college, personal issues, etc., The stress of clinical dental students is multifactorial in nature. Identifying the sources of stress and early remedial action could help preventing the distress in the health professions students.<sup>[7,8,11-16]</sup>

## METHODS

### Study design

The study adapted a cross-sectional observational study design done using Google form questionnaire.

### Subjects and methods

The dental environmental stress (DES) questionnaire was developed by Garbee *et al.* and later modified by several authors to suit their area of study.<sup>[11,12,17,18]</sup> It is proven to be a highly reliable and valid tool to measure the stress of the dental students.<sup>[18]</sup> The current study aims to compare the stress level of the undergraduate clinical dental students' year-wise using a modified DES questionnaire and to identify the key contributing factors of stress for each year.

The DES questionnaire was modified to suit the study population and adopted after prevalidation. The modification done was to simplify the language of the questionnaire for better interpretation by the students. The validity of the questionnaire was unaffected. The questionnaire was given to 3<sup>rd</sup> year, final year dental undergraduate students, and the interns after obtaining their consent. The links for the questionnaires were separate to collect the responses batch wise. The questionnaire had thirty-five items, and the options for each question ranged from not applicable to very stressful in a scale of 0–4. The questions were grouped into five domains, namely, academic factors, patient and clinic responsibilities, faculty relations, personal life issues, and professional identity. All undergraduate clinical dental students of a private dental college in south India participated in the study. The total sample size was 166 students, of which 73 were from 3<sup>rd</sup> year, 50 were final year, and 43 were interns. The researcher conducted the study in the same institute students. Hence, a meeting was conducted with the students to receive their consent to participate in the study following which the questions were verbally explained to them to facilitate genuine and flawless response. The questionnaire was set in an electronic format (Google form) to suit the millennial generation, and the data were collected. The stress score of the students was calculated domain wise in addition to the total score for comparison.

### Statistics analysis

The data were collected in Microsoft Excel format and analyzed using Microsoft excel and SPSS software(IBM). Descriptive statistics with frequencies along with one-way ANOVA and two-way ANOVA with *post hoc* analysis was used for data analysis. The total score of each student for all 35 questions was calculated for overall stress score. The minimum possible score was 0, and maximum possible score

was 140. The score was split into four equal ranges from total score of 140, and they were grouped as follows: <35 – not much stressed; 35 to <70 – mild stress; 70 to <105 – moderate stress; and >105 – highly stressed.

### Ethical approval

The study was permitted by the Institutional Review Board and Institutional Ethical Committee. Informed consent was obtained from the students. The reference number is IGIDSIEC2016NRP04FASMPRI.

## RESULTS

The overall stress score of the students in each batch and factor-wise score of the batches was calculated. Table 1 tabulates the overall stress level among the students of different batches. Nearly 39% of the 3<sup>rd</sup> year students, 54% of the final year students, and 61% of the interns were with moderate and high stress. The one way ANOVA with *post hoc* analysis [Table 2] of the overall stress score revealed that the 3<sup>rd</sup> year students were significantly less stressed than their seniors. The final years and the interns had equal amounts of stress.

The data were collected batch-wise 3<sup>rd</sup> year, final year, and interns. In each batch apart from the overall stress score, factor-wise scores were also calculated. The data followed normal distribution, and it was subjected to two-way ANOVA test since there were two independent variables, namely, the batch and the factors and one-dependent variable the overall stress score. Two-way ANOVA of factor-wise score of the batches is tabulated in Table 3. This analysis was done to check the difference in the stress level between the batches and also the difference in the stress level due to the five factors within the batch too. The analysis of the batches individually (Table 4) reveals that for the third year students and interns all factors of stress are contributing equally. Whereas for final year [Table 5], academic factors, patient and clinic responsibilities, and professional identity cause equal amount of greater stress than that of faculty relations and personal life issues.

## DISCUSSION

Based on the current study, the final year students and interns were more stressed than the 3<sup>rd</sup> year students. The academic factors, patient and clinical responsibilities, and professional identity were more predominant factors that cause stress than the faculty relations and the personal life issues. The faculty relations are concerned with the faculty being partial with the students, the criticism faced by the students from faculty, difference of opinion, availability, and approachability of the

**Table 1: Overall stress level among the students**

	Third BDS (%)	Final BDS (%)	Interns (%)
Not stressed	12 (16)	3 (6)	1 (2)
Mild stress	33 (45)	20 (40)	16 (37)
Moderate stress	24 (33)	20 (40)	24 (56)
Highly stressed	4 (6)	7 (14)	2 (5)

**Table 2: Overall stress score comparison ANOVA and *post hoc***

ANOVA					
	Sum of squares	df	Mean square	F	Significant
Between groups	6186.422	2	3093.211	4.490	0.013
Within groups	112302.036	163	688.970		
Total	118488.458	165			

  

Descriptive				Multiple comparisons ( <i>post hoc</i> )				
Batch	n	Mean	SD	Batch	Batch	Mean difference	SE	Significant
Third BDS	73	60.32	27.409	ThirdBDS	Final BDS	-13.445*	5.260	0.036
					Intern	-10.545	4.354	0.050
Final BDS	50	73.76	29.473	FinalBDS	Intern	2.900	5.103	0.921
Intern	43	70.86	19.300					
Total	166	67.10	26.798					

SD: Standard deviation, SE: Standard deviation, \*: The mean difference is significant at the 0.05 level.

**Table 3: Two-way ANOVA - batch, factors, and the scores**

Factor	Third BDS mean	Final BDS mean	Intern
Academic	1.709	2.415	2.026
Clinic	1.848	2.310	2.151
Faculty	1.622	1.820	1.997
Personal	1.702	1.830	1.904
Professional	1.758	2.253	2.078

**Table 4: Individual batch analysis – 3<sup>rd</sup> year, final year and Interns**

ANOVA					
3 <sup>rd</sup> year					
	Sum of squares	df	Mean square	F	Significant
Between groups	2.012	4	0.503	0.637	0.637
Within groups	284.437	360	0.790		
Total	286.449	364			
Final year					
Between groups	15.742	4	3.936	4.237	0.002
Within groups	227.577	245	0.929		
Total	243.319	249			
Interns					
Between groups	1.457	4	0.364	0.781	0.539
Within groups	97.960	210	0.466		
Total	99.417	214			

faculty and the clinical atmosphere created by them. A similar study by Harikiran *et al.* in the final year students of Bengaluru also reported the academic factors and clinic responsibilities to cause more stress to the students.<sup>[19]</sup>

Tangade *et al.*<sup>[13]</sup> had studied the perceived stress of dental students except interns and found that the fear of unemployment and professional identity also to be in the top sources along with the academic factors. Although they do not have any examinations, still the stress level of the interns is equal to

that of the final year students in the current study mainly due to the realization of professional identity.<sup>[13]</sup> The current study also aligns with the results of Polychronopoulou and Divaris where the same three factors were proved to be predominant stressors in a multicountry study.<sup>[7]</sup>

A similar study by Naidu *et al.* concluded that stress related to interpersonal relationship and clinical factors predominate the other causes of stress in clinical dental students which is in support of the current study.<sup>[14]</sup> A study on Malaysian dental students showed a trend of increasing stress from 1<sup>st</sup> year to 5<sup>th</sup> year. The stress in the current study showed a similar increase in trend from 3<sup>rd</sup> year to final year, interns being equal with final years in the stress score.

The top stressors were academic factors which are aligning with the current study too. However, the authors have reported decrease in the stress due to professional identity with increase in academic year, whereas in the current study, it is reversed, i.e., with increase in academic year, the stress due to professional identity is also increased. This may be due to the current decline of the dental profession and raise in unemployment problem in India.<sup>[7,15]</sup> Similarly, the authors have reported peak stress in 3<sup>rd</sup> year students in contradiction to the results of the current study. The authors have claimed the transition phase between preclinical to clinical as the cause. However, in the current study, the transit between preclinical and clinical dentistry is not so stressful for the studied population of students.<sup>[15]</sup> This may be attributed to the system of early clinical exposure, early community exposure, and integrated teaching prevailing from the 1<sup>st</sup> year of under graduation itself in the Institute that is supported by the conclusion of Alzahem *et al.*<sup>[16]</sup> The study by Sekhon *et al.*<sup>[20]</sup> states that the students relationship with faculty also as a major contributor of stress in contradiction to the current study where all the questions in relation to faculty relations were not considered as major stress contributors.<sup>[13]</sup>

The current study aligns with the results of Kumar *et al.*,<sup>[21]</sup> Acharya,<sup>[22]</sup> and Ara *et al.*<sup>[23]</sup> in having the patient and clinic responsibilities being the major cause of stress. As justified

**Table 5: Final year factor-wise comparison**

Factor	Factor	Mean difference	Significant
Academic	Clinic	0.1050000	1.000
	Faculty	0.5950000*	0.023
	Personal	0.5850000*	0.027
	Professional	0.1616667	1.000
Clinic	Faculty	0.4900000	0.116
	Personal	0.4800000	0.134
	Professional	0.0566667	1.000
Faculty	Personal	-0.0100000	1.000
	Professional	-0.4333333	0.255
Personal	Professional	-0.4233333	0.290

\*: The mean difference is significant at the 0.05 level.

by these studies the quota system for completion of cases that still prevail in many dental colleges in India is an important causative factor.<sup>[15,21-23]</sup> The clinical competence of the students' increases with the increase in number of patients treated by them but care should be taken not to overweigh the other factors. Quality improvement measures can be considered instead of quantity. Instead of fixing clinical quota of total number of cases to be completed, the students can be assessed on targeting their competency in doing all clinical dental procedures.

The limitations of the study include that the result is evidence only from one center and not a multicentric study which would be able to give a much broader view. The study is cross-sectional in nature wherein the given period the students in all the 3 years were assessed. Following up the same batch of students as they progress on from 1<sup>st</sup> year till final year could reveal a different perspective on the nature of stress. Future research can be conducted by following the same batch of students. Multicenter study can give broader perspectives of the sources of stress. Within the limitations of the study, the study implies that the final years and interns had equal level of stress followed by the 3<sup>rd</sup> years. For the final year students, the academic factors followed by patient and clinic responsibilities and professional identity were the key stress contributing factors. Faculty relations and personal life issues were the least contributing factors for all the three batches. For 3<sup>rd</sup> years and interns, all the factors were equally contributing to the stress.

## CONCLUSION

Within the limitations of the study, the study implies that the clinical dental undergraduate students in the study were stressed. The prime source of stress differs based on the year of the study. The institute and the teaching faculty should take the causative factors into account, modify them, and support the students to overcome the stress and help them perform efficiently.

Revision of the redundant areas in curriculum, considerate changes in the clinical quota system, academic support system, guidance, and counseling for psychological well-being of the students are the need of the hour.

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## Conflicts of interest

There are no conflicts of interest.

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