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Stress Experienced By Undergraduate Dental Students Performing Dental Treatment for the First Time - A Cross Sectional Study

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Abstract:

Aim:
To study the stress experienced by undergraduate dental students performing treatment on live patients for the first time and evaluation of their stress manifestations and stress management by taking into account factors including clinical factors and academic factors.

Background:
Students providing dental treatment of varying levels of intensity to live patients for the first time are susceptible to stress due to clinical, academic, patient and dental procedure factors. This stress may have varied manifestations which may affect their performance and their lifestyle. It may have adverse effects on the dental treatment provided reducing patient satisfaction and quality of dental care.

Materials and Methods: A self -administered questionnaire was distributed among 50 third year students in the BDS (Bachelor of Dental Surgery) course for data acquisition. The chi-square test was applied for the statistical analysis.

Results: High stress was reported among the students for stressors like, competition with batch-mates (64%), examinations and grades (40%) and patients not arriving at the prescribed time for clinic examinations (48%). The chi-square test showed significant association between gender and variables like completing graduation requirements (p=0.009) and difficulty of clinical and laboratory work (p=0.010).

Conclusion: The highly intensive work along with various other factors have the capacity to induce stress in dental students which in turn result in conditions like depression and burnout. Though stress cannot be completely eliminated from dental practice it can be considerably minimised thus promoting productivity.

Keywords: Dental students, patient care, stress, undergraduates

INTRODUCTION:

Stress has been defined as the psychological and physical state that results when the resources of the individual are not sufficient to cope with the demands and pressures of the situation [1].This constant environment of stress has been shown to result in situations where dental students may develop signs of burnout, anxiety and depression. This also plays a negative influence on their personal and professional communications, in turn reducing the quality of treatment [2].

The BDS (Bachelor of Dental Surgery) course is a long and often taxing course which causes a lot of students to suffer from stress [3]. The dental profession is subject to stress related disorders along with musculoskeletal disorders leading to early retirement [4]. This shows that stress can majorly affect the physical and mental health of the students [5].

Fear of failure is also a major source of stress in dental students. Fear is described as an apprehensive and uncomfortable feeling [6]. The nature of the dentist/patient relationship is of utmost importance. Patients tend to be calmer when the dentist projects confidence [7]. The most common stressors identified are falling behind schedule, technical perfection and the pain and anxiety of the patients [8].

The main strategies, according to the study published by Allan K.H.Pau et al (2003) have been used to help stressed students, i.e., decreasing the number of stressors and increasing the ability to cope with stress. One strategy includes several components, such as reducing fear of failure and workload pressure due to examinations and requirements [9]. Another strategy includes coping techniques, such as deep breathing exercises and reflective regulation of emotions. Although positive effects have been reported for most of the programs, these have mainly been evaluated using subjective self-report measures. There is a need for more research to identify the most effective stress management program [4].

The students in the third year of their BDS course are more prone to stress as they begin clinical treatment in this year. This in turn exposes them to new stressors. Therefore these dentists require more knowledge about dental anxiety and managing their stress [5].

MATERIALS AND METHODS:

The study was approved by the Scientific Review Board of Saveetha Dental College, Chennai. A total of fifty participants were randomly selected from the third year student population of Saveetha Dental College.

STUDY POPULATION:

50 students belonging to the third year of the BDS course, working in Saveetha University Dental Clinics were approached.

METHODS:

The questionnaire was self-formulated and was delivered by hand and collected on completion. The medium of answering the questionnaire was English. All the responses of the questionnaire were kept anonymous. The questions were framed in order to assess the stress faced by the dental students and the factors which contributed the most to this stress. The data collected is entered and analysed using SPSS software, IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp .The results are tabulated and described in tables and bar graphs. The results were found through analysis using domains like academics, patient satisfaction and clinical requirement.

QUESTIONNAIRE DESIGN:

The questionnaire was based on the working and academic stress factors of dental students and is based on the Dental environment stress (DES) questionnaire. The stress factors were slightly modified to suit the curriculum and grading system of Saveetha dental college. The questionnaire consisted of questions related to stress, questions related to fear and questions related to nervousness which were rated as seen below. There is one question requiring a 'Yes-or-No' answer. The following numbers are assigned to rate the stress levels as:
1-no stress/fear/nervousness/difficulty
2-moderate stress/fear/nervousness/ difficulty
3-high stress/fear/nervousness/ difficulty

The questionnaire is reproduced below:

1. Age:

2. Gender:

3. How stressful do you find the amount of assigned work?
   - 1
   - 2
   - 3
4. How difficult do you find the course work provided?
   - Not difficult
   - moderately difficult
   - very difficult
5. How stressful do you find competition with your batch-mates?
   - 1
   - 2
   - 3
6. How much stress do you associate with completing graduation requirements?
   - 1
   - 2
   - 3
7. Stress associated with examinations and grades.
   - 1
   - 2
   - 3
8. Do you have the fear of failing your course, repeating a year or missing a licensing exam?
   - No fear
   - moderately afraid
   - very afraid
9. Do you feel you lack time to finish your assignments?
   - Yes
   - no
   - Do you have the fear of not meeting the patient's satisfaction?
   - No fear
   - moderately afraid
   - very afraid
10. The stress associated with being unable to handle the work load?
    - 1
    - 2
    - 3
11. Stress associated with lack of follow up from patients?
    - 1
    - 2
    - 3
12. Stress associated with patients not being available at prescribed time for treatment or examination?
    - 1
    - 2
    - 3
13. Nervousness before treating a patient for the first time?
    - Not nervous
    - moderately nervous
    - very nervous
14. Difficulty in learning the precision manual skills required in clinical and laboratory work?
    - Not difficult
    - moderately difficult
    - very difficult
15. Is the stress associated with the experience of comprehensive patient care for the first time overwhelming?
    - 1
    - 2
    - 3
16. Stress associated with the being able to communicate with all patients.
    - 1
    - 2
    - 3
17. Stress associated with receiving criticism about your work.
    - 1
    - 2
    - 3
18. Stress associated with inspiring confidence in patients seeking your treatment for the first time.
    - 1
    - 2
    - 3

RESULTS:

Analysis and interpretation:

The study population consisting of 50 data was carried out at the beginning of the academic year among the third year students and it discussed experiences of the preceding academic year. *Table 1* shows the gender of the study population. Female students (80%) greatly outnumbered Male students (20%) because it was a cross-sectional study.

The stressors among respondents was also studied. The outcome of this study is evident in *Table 2*. Most of the respondents felt moderately stressed about patient satisfaction. Besides lack of follow-up from patients (66%), inspiring confidence in patients for the first time (60%) and comprehensive patient care for the first time (52%).

Table 1: GENDER OF THE STUDY POPULATION

Variable		Frequency	Percentage
Gender	Male	10	20%
	Female	40	80%

Table 2: STRESSORS AMONG RESPONDENTS

	No stress		Moderate stress		High stress	
	Frequency	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Amount of assigned work	5	10%	28	56%	17	34%
Competition with batch mates	6	12%	12	24%	32	64%
Completing graduation requirements	14	28%	19	38%	17	34%
Examination and grades	13	26%	17	34%	20	40%
Handling the work load	15	30%	25	50%	10	20%
Lack of follow up from patients	8	16%	33	66%	9	18%
Patients not arriving at the prescribed time during examinations	5	10%	21	42%	24	48%
Comprehensive patient care	17	34%	26	52%	7	14%
Receiving criticism	10	20%	25	50%	15	30%
Inspiring Confidence in patients	13	26%	30	60%	7	14%

Academic items were the most quoted stressor among third year students. Besides examinations and grading (40%) and competition with batch mates (64%) and lots of stress and the amount of assigned works (56%).Clinical requirement problems with patients not being available at prescribed time for treatment (48%) stressor among the third year students and receiving criticism about their work (50%) moderately stressful among the students.

To investigate the domains of the various factors for the stressor are patient satisfaction, clinical requirement and academics. While considering these three factors patient satisfaction is more influential than other two factors.

Fear associated with Patient Satisfaction is indicated in *Figure 1* where its output shows that the moderately afraid (44%) is at maximum, followed by very afraid (34%) and the least response is no fear (22%) which shows the least influence in fear of not meeting the patient's satisfaction.

The course of work provided with the lack of time for assignments was compared and is indicated in *Figure 2*. It is evident from the figure that the respondents choosing high difficulty by saying yes (48.6%) are higher in percentage, followed by moderate difficulty in which 45.7% of the respondents are affected with lack time to finish their assignments.

Figure 1. Graphical representation of Fear associated with Patient Satisfaction.

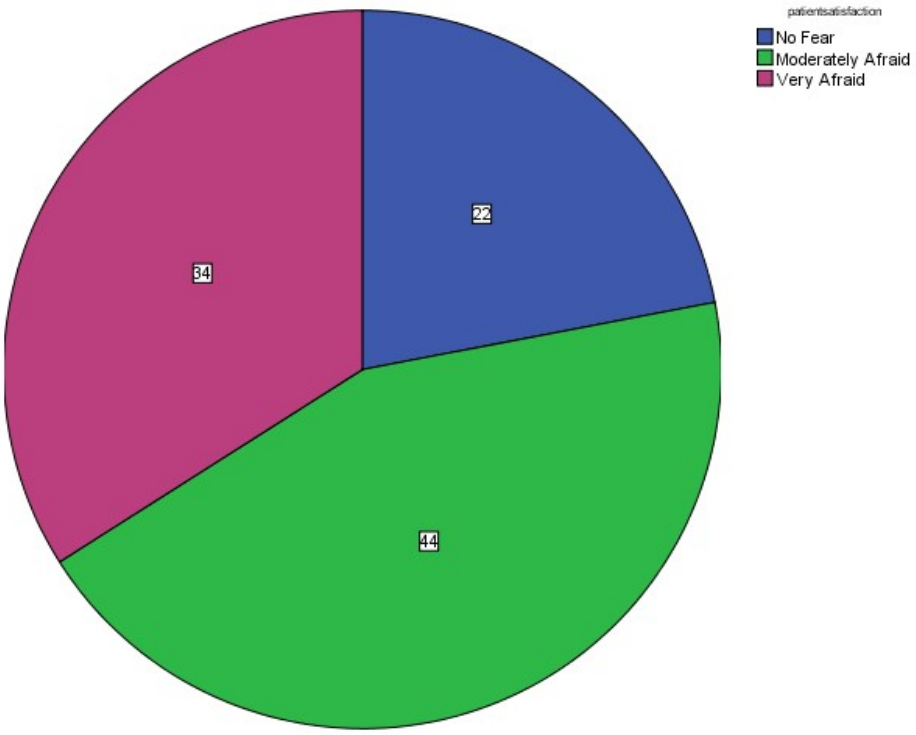

Figure 2. Comparison between coursework provided and lack of time for assignments, reported by undergraduate dental students, Chennai, in April 2016.

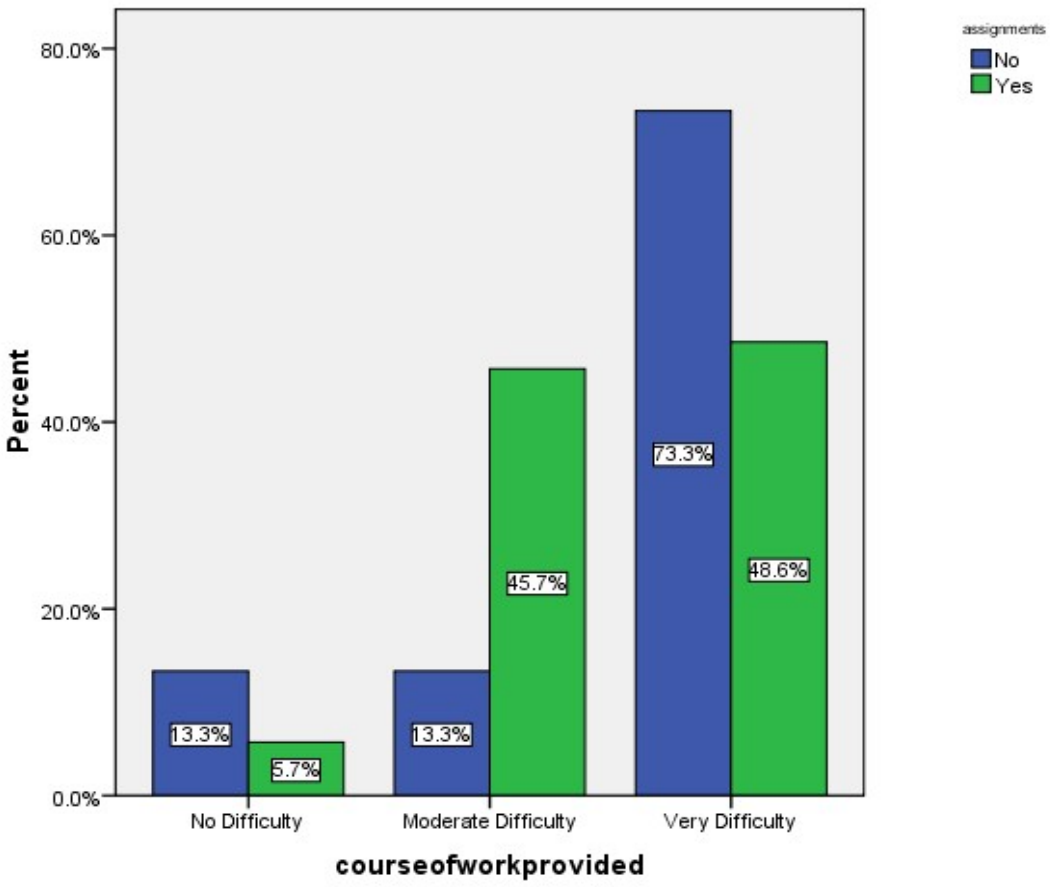

Figure 3: Completing the Graduation and Examination Requirements vs Grades of the Students, reported by undergraduate dental students, Chennai, in April 2016.

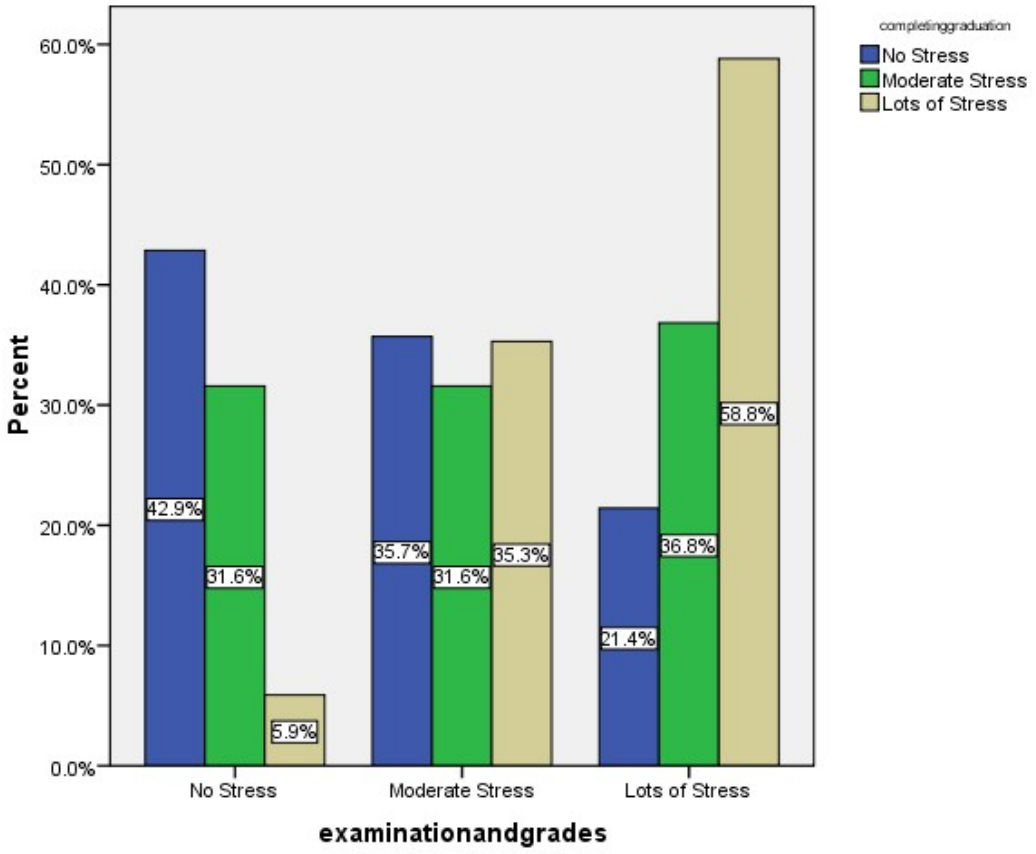

Table 3: CHI-SQUARE TEST FOR COMPARING THE VARIABLES

Variables		Gender		Chi-Square
		Male	Female	
Competition with batch-mates	No Stress	1	5	4.688 at 2df P=0.096
	Moderate Stress	5	7	
	Lots of Stress	4	28	
Completing graduation requirements	No Stress	1	13	9.367 at 2df P=0.009
	Moderate Stress	8	11	
	Lots of Stress	1	16	
Nervousness	Not Nervous	1	5	3.568 at 2df P=0.165
	Moderately Nervous	7	15	
	Very Nervous	2	20	
Clinical and laboratory work	No Difficult	5	4	9.201 at 2df P=0.010
	Moderately Difficult	5	31	
	Very Difficult	0	5	
Receiving Criticism	No Stress	2	8	2.667 at 2df P=0.264
	Moderate Stress	3	22	
	Lots of Stress	5	10	

This graph compares the completing the graduation and examination requirements and grades of the students. It is evident from the diagram that 58.8% of students have high stress due to examinations and completing graduation requirements. 42.9% of students say there is no stress due to examinations and completing the graduation requirements.

Chi-Square test for independence of attributes –

Hypothesis:

H_0: There is no significant association between Gender and Variables (Competition with batch mate, Completing graduation**,** Nervousness, Clinical and laboratory work and Receiving Criticism).

H_1: There is significant association between Gender and Variables (Competition with batch mate, Completing graduation**,** Nervousness, Clinical and laboratory work and Receiving Criticism). *(Refer Table 3)*

The chi-square test revealed the significant association for the variable such as completing graduation (p=0.009) and clinical and laboratory works (p=0.010) which are closely associated with gender are proven to be true. But unfortunately competition with batch-mates, nervousness and receiving criticism are proven to be untrue.

The overall review of study shows the domains of the various factors for the stressor are patient satisfaction, clinical requirement and academics. While considering these three factors patient satisfaction is more influence than other two factors.

DISCUSSION:

This was a cross sectional questionnaire based study which was distributed among the students in their third year in the BDS course as this is the first time the students directly treat patients and they are therefore the most prone to stress regarding the treatment of patients. There is therefore a need for dental students to be more knowledgeable about their dental anxiety, nervousness and stress management. Many studies have been conducted in schools across the world through surveys using the DES (Dental Environment Stress) questionnaire showing increased levels of stress amongst dental students [4]. The distribution of the current study population considered does not follow a normal distribution curve. The number of female respondents (40) exceeded the number of male respondents (10).

This study was conducted to assess the stress faced by the third year BDS students in Saveetha Dental College in Chennai, Tamil Nadu, India. The BDS (Bachelor of Dental Surgery) students treat live patients for the first time in the third year of their course and therefore it is a major leap from the exposure and syllabus of the first and second years of study where they are only trained in the Basic Medical Sciences along with Fundamentals of Dentistry and Behavioural Sciences. Perception of stress by third year students tends to be higher than that of senior years [10, 11]. Previous investigations have found Clinical year students generally had higher scores for the educational environment than those in the preclinical study which corresponds with the results of this study. The relatively high scores allocated by clinical year students to these stressors reflect the reality of the stressful nature of the dental school environment [10, 7].

It is recognized that dentistry is associated with stressful environment [12, 13] .The major stress provoking factors in dentistry include the time management pressures, uncooperative patient and technical methodology of work [14].The BDS(Bachelor of Dental Surgery) course is known to be demanding and this study seeks to identify the possible stressors and their correlations with other accompanying factors. On studying the stressors faced by the respondents that while a significant part of the study population (34 %) found the amount of work assigned highly stressful while a majority of the respondents (56%) found it moderately stressful. Students in earlier clinical years tend to have higher levels of stress when compared with later years on items related to academic performance like examinations and grades, competition with peers for grades and fear of failing a course or a year supported by previous studies [2, 7, 15]. In accordance to this, Competition between batch mates was found to be major stressor for the respondents (64%) reporting high stress, its association with gender was found insignificant (p = 0.096),the reason for this being that in the College chosen for the study, the third year students are allotted their clinics on the basis of their grades and performance. This may therefore not apply to all dental students in general. This result may also be due to the skewed distribution. Expertise in dentistry shows the need for clinical and patient management skills which contribute toward stress perceived by students.

The academic demands, manual dexterity, and clinical management skill requirements expose dental students toward stress which is quite dissimilar compared to that faced by students in other academic fields[16]. Examinations and Grades therefore were also shown as high stressors (40%) as graduation depends on the consistent performance of the students. This is in accordance with previous findings. In addition to this, a negative association has been reported between stress and academic performance of dental students [17, 18, 19]. The factors which have been found to evoke greater stress in females of clinical years are fear of failing a course or a year, examinations and grades according to previous studies [2, 20, 21]. This result was not significantly seen in the present study. Since the perception of stress is frequently influenced by sociocultural factors. Patients not arriving at the prescribed time for the clinical exams of the third year students is also reported as a high stressor (48%) as clinical exams are crucial for the evaluation of the clinical management and dexterity of the students, in which students cannot afford to perform poorly. Around 50% of the students found handling the workload moderately stressful while 66% of the students found lack of patient follow-up to also be a cause of moderate stress. This is in agreement with earlier investigations where, third year students have also expressed concern over the difficulty and amount of class work. This is the year students are

introduced to clinical procedures in the preclinical laboratory. They may face difficulties in learning clinical procedures both theoretically and practically [22, 23, 24]. The large quantity of difficult syllabus the students are required to master may cause them to feel inadequate for the task, which in turn results in the students becoming fearful about being able to complete their examination requirements on time. Dental schools put a heavy emphasis on clinical sciences and focus on producing graduates with competent clinical skills [25] .Some students fear they will not be able to catch up if they fall behind or fail a course or the year. Half the study population (50%) claim that receiving criticism on their work causes them moderate stress. The increased student-staff interaction in the clinics for third year students may also cause them to feel humiliated when he or she is criticized by the staff in front of the patients and peers. These findings were in agreement with previous studies which suggest that clinical years are more stressful than the nonclinical years [2, 26, 27, 20]. Other investigative studies have also reported that for the clinical year group, faculty-related such as atmosphere created by clinical supervisors and differences in opinion between clinical staff concerning patient treatment also caused significant stress. The significance for the completion of graduation requirements was highly significant ($p = 0.009$), though only 34% of the respondents found it a high stressor. Clinical and laboratory work handling also showed significant association ($p = 0.010$).The significance of these variables is shown in association to gender and the associations of variables like competition with batch mates ($p = 0.096$), nervousness ($p=0.165$) and receiving criticism ($p=0.264$) is proven untrue. A wide range of intervention studies have evaluated such programs for dental students to reduce stress including specific courses, stress-reduction sessions, introduction to behavioural sciences, and faculty incorporated advising systems [28].

The establishment of student advisors and counsellors within a dental school, combined with a faculty advising system and student-oriented programs, have contributed to an improved educational environment by enhancing stress management [29, 30].

It is also important to consider the limitations of this study as it should be pointed out that it is a cross sectional study with data collected from self-administered questionnaires. Cross sectional studies are carried out in a single point of time and therefore perceptions of stress in the third year students may vary in a more normalized distribution and larger sample size.

CONCLUSION:

Stress faced by dental undergraduate students treating live patients for the first time manifests mainly due to stressors like comprehensive patient care, competition with peers ,completion of graduation requirements and discrepancies in the arrival of patients at the scheduled time for examinations. A significant association was detected between gender and handling of clinical work along with graduation requirements. The stress faced by students in the clinical scenario is mainly related to academic implications. The dental students should combat stress by reducing the effect of the stressors and by regulating their own emotional responses reflectively.

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