

## Assessment of Stress Level among Dental School Students: An Indian Outlook

Pradeep S. Tangade<sup>1</sup>, Anmol Mathur<sup>2</sup>, Rahul Gupta<sup>3</sup>, Shikha Chaudhary<sup>3</sup>

### ABSTRACT

**Background:** Evaluating the factors influence student perception, might allow programmatic changes designed to enhance students' psychosocial well-being and academic performance. The purpose of this study was to investigate perceived sources of stress on dental students and the role of parents in their career choice decisions.

**Methods:** In a cross-sectional design, a modified dental environmental stress questionnaire was administered to all dental students. The responses to the questionnaire were based on a four-point Likert scale, not stressful to severely stressful. Means and standard deviations were determined for stress scores of individuals for each item and were used to compare the classes, genders, and choices. Student's t, one way ANOVA, and Newman Keuls multiple comparison post hoc tests were used to analysed the data at the significant level of  $P \leq 0.05$ .

**Results:** A total of 304 undergraduate students constituted the study population. Of the respondent, 60% were men and 40% were women. The final year students presented with higher stress scores. In gender comparison, men suffered more stress (62.9%) than women (60.1%). According to the career choice decision, students forced by parents had more perception of stress (69.0%) and the students staying in the hostel (62.7%) showed more perception of stress than day scholars (56.3%).

**Conclusion:** The study indicates that the congenial environment needs to be created for dental education and the parents also need to be counselled against forcing their children to join an educational programme i.e. not of their choice.

**Keywords:** Mechanical, Psychological, School dentistry, Stress, Students.

**Received:** October 2010

**Accepted:** January 2011

Dent Res J 2011; 8(2): 95-101

### Introduction

The perception of stress, in fact is frequently by one's personal system of beliefs and attitudes. These self-cognitions mediate the perceived stressor and consequent student behaviour. Self-cognitions associated with control and self-efficacy tend to lower stress and distress levels resulting in improved academic performance.<sup>1</sup>

The term "stress" describes external demands (physical or mental) on an individual's physical and psychological wellbeing.<sup>2</sup> Stressors associated with dentistry include time and scheduling pressures, managing uncooperative patients and

the highly technical and intensive nature of work.<sup>1,3-5</sup> This resulting stress can lead to depression, anxiety, substance misuse, absenteeism; diminished work efficiency, and burnout.<sup>4,6-8</sup> The roots of this occupational stress may have their origin in the educational process as dental students experience high levels of stress during training.<sup>1,4,6-9,10</sup>

Contemporary curricula require dental students to attain diverse proficiencies, including the acquisition of theoretical knowledge, clinical competencies, and interpersonal skills.<sup>9</sup>

<sup>1</sup> Professor, Department of Public Health Dentistry, Kothiwal Dental College and Research Centre, Uttar Pradesh, India.

<sup>2</sup> Assistant Professor, Department of Public Health Dentistry, Kothiwal Dental College and Research Centre, Uttar Pradesh, India.

<sup>3</sup> Post Graduate Student, Department of Public Health Dentistry, Kothiwal Dental College and Research Centre, Uttar Pradesh, India.

Correspondence to: Pradeep S. Tangade, Email: ptangade@rediffmail.com

In a previous study, conducted by Hoad-Reddick et al,<sup>10</sup> concluded that many factors led to dentistry being particularly stressful such as: the combination of time pressure, frightened patients, financial problems, staff supervision, and the rou-tine and boring work regime.

In India, the duration of the Bachelor of Dental Surgery programme is of four calendar years with progression examination at the end of each year, followed by 1 year paid rotatory internship in dental colleges and is governed by the Dental Council of India. During the first 2 years of graduation, students are taught basic science and liberal arts whereas the later years are dedicated for imparting clinical education.

The fee for the studying dentistry is the highest for any undergraduate programme next to medicine and although there is a high burden of disease in the country, there are currently few job opportunities in India.

The role of nature of accommodation has been investigated in previous studies<sup>11,12</sup> on dental students' stress but not in Indian scenario. A very strong family bond exists among Indian families and generally lasts for a lifetime. India is a typical Asian country with strong sense of family values. Respect for elders and heeding their advice are considered sacred. Professional education, especially medicine, dentistry, and technical education, is held in very high esteem. Parents who cannot fulfil their dreams of professional education try to fulfil it through their children. In many cases, the children are forced by their parents to pursue a career that is not of their choice.<sup>3</sup>

The aim of the current study was to identify the sources of stress among dental students in India, to investigate whether specific stressor were related to year of study or gender, and determine whether parents contributed to the stress level of students, also explore the role of accommodation in dental student stress. It would also be useful for dental educators to understand how levels of stress and psychological disturbance may change over the time in which the student is engaged in the educational process. Such empirical data might allow for programmatic changes designed to enhance student psychosocial well-being and academic performance.

## Materials and Methods

**Participants:** The study population comprised

undergraduate first to fourth year dental students enrolled with the MJP Rohailkhand University, India.

**Procedure and Instruments:** Verbal consent was obtained from the respondents and ethical approval for performing the survey was obtained from the ethical committee of Kothiwal Dental College and Research Centre.

Stress was measured using a modified dental environment stress (DES) questionnaire<sup>3</sup> which consisted of 38 questions applicable to the Indian dental education background. The response for each question was based on a Likert scale with response option of 1- not stressful, 2- slightly stressful, 3- moderately stressful, and 4- severely stressful. A pilot study was conducted to test the internal consistency and reliability of the questionnaire, by considering convenience sample of 40 from the same population. The internal consistency of the questionnaire was tested using Cronbach's Alpha; significant results were obtained by a set of 17 questions out of 38, therefore rest of the questions were rejected for the further analysis. The study was conducted in middle of the academic term for the year 2010-11. All undergraduate students were requested to participate in the study except for the interneers attending the compulsory rotatory internship. Questionnaires were distributed by the authors during one lecture for each year with prior permission from the dean of the institution and the aims and the purpose of the study was communicated well in advance to the students. The time allocated for the completion of the questionnaire was 15 minutes.

Participation in the research was on voluntary basis and no incentives were used for the respondents. Students present on the days of the survey were included. No attempt was made to trace the students who remained absent on the survey days as they constituted the exclusion criterion. In addition to the data encryption standard (DES) item responses, students were asked whether attending dental school was their own choice or their parents' choice and whether dental school was their first choice of admission and about their nature of accommodation. Demographic information (class, gender, and age) was also obtained.

## Study population

A total of 400 individuals were invited to partici-

pate in the study. Out of which, 304 reported for the study with a response rate of (76.5%).

### Statistical Analysis

Means and standard deviations were determined for stress scores of individuals for each item and were used to compare the classes, genders, and choices. Student's t-test was used for two group comparisons. Comparison of different reasons for joining dentistry with respect to their stress was done by one way ANOVA and Newman Keuls multiple comparison post hoc procedure. A P value of  $\leq 0.05$  was considered statistically significant. All the data collected were tested for normality before analysis using version 11.0, SPSS software.

### Results

Mean DES scores for each item questions were compared within different academic years, carrier choice decision, and gender and about their nature of stay. A total of 304 of the 400 enrolled undergraduate students participated in the survey.

From study population, 182 (59%) were men and 122 (41%) were women (Table 1), with the age of the study population ranged between 17 years to 28 years.

The difference between genders was found to be statistically significant and it was noteworthy that male students had higher mean DES scores ( $62.91 \pm 9.9$ ) than their female counterpart ( $60.17$

$\pm 9.6$ ), comparison done with t-test.

Table 2 shows mean scores for each of the 17 stressors across each of the four years of academics. The top stressor for all years was fear of failing ( $3.07 \pm 0.72$ ), followed by fear of unemployment after graduation climbed to second top stressor ( $2.73 \pm 0.74$ ), then financial sources ( $2.71 \pm 0.83$ ), insecurity regarding professional future ( $2.69 \pm 0.95$ ), lack of time for relaxation ( $2.69 \pm 0.95$ ), and compulsory attendance ( $2.64 \pm 0.74$ ) were placed. For most of these items, third and final year students reported more stress than first and second year but the final year students shows maximum stress among all academic years. There was a significant difference between all the academic years except for the language barrier.

Investigating about the nature of the accommodation, it was found that those who were staying at their home showed less tendency towards stress ( $56.36 \pm 6.60$ ) as compared to their hostel mates ( $62.78 \pm 10.09$ ).

Comparison of different reasons for joining dentistry with respect to their DES scores showed that  $57.29 \pm 8.46$  had joined dentistry by choice,  $69.02 \pm 8.01$  had been forced by their parents and  $60.63 \pm 9.91$  had no other options. ANOVA showed significant differences among these reasons (F value: 49.12;  $P < 0.001$ ). Pair wise comparison by Newman Keuls multiple comparison post hoc procedure showed significant differences between each two pairs ( $P < 0.001$ ).

**Table 1.** Distribution of study subjects according to academic years and gender

Class	Men	%	Women	%	Total	%
First year	38	54.29	32	45.71	70	23.03
Second year	44	62.86	26	37.14	70	23.03
Third year	46	64.79	25	35.21	71	23.36
Fourth year	54	58.06	39	41.94	93	30.59
Total	182	59.87	122	40.13	304	100.00

**Table 2.** Sources of stress and differences in the mean stress scores according to the classes

No.	Items	First year	Second year	Third year	Fourth year	Total	P-value
		Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD	
1	Lack of home atmosphere	2.44 $\pm$ 0.97	2.24 $\pm$ 0.93	2.49 $\pm$ 0.92	2.74 $\pm$ 0.96	2.50 $\pm$ 0.96	0.01
2	Making new friends	1.92 $\pm$ 0.72	1.92 $\pm$ 0.64	1.88 $\pm$ 0.74	2.23 $\pm$ 0.82	2.01 $\pm$ 0.75	0.00
3	Rules and regulation	2.07 $\pm$ 0.78	2.00 $\pm$ 0.68	2.42 $\pm$ 0.71	2.45 $\pm$ 0.84	2.25 $\pm$ 0.78	0.12
4	Financial resources	2.62 $\pm$ 0.74	2.25 $\pm$ 0.87	2.87 $\pm$ 0.60	3.34 $\pm$ 0.68	2.71 $\pm$ 0.83	0.00
5	Dependences (smoking/alcohol)	2.00 $\pm$ 0.72	2.18 $\pm$ 0.78	2.21 $\pm$ 0.55	2.67 $\pm$ 0.70	2.29 $\pm$ 0.74	0.00
6	Behaviour of teaching staff	2.61 $\pm$ 0.76	2.32 $\pm$ 0.67	2.38 $\pm$ 0.76	2.98 $\pm$ 0.74	2.60 $\pm$ 0.78	0.00
7	Atmosphere created by clinical supervisors	1.68 $\pm$ 0.64	1.97 $\pm$ 0.37	2.02 $\pm$ 0.58	2.44 $\pm$ 0.77	2.06 $\pm$ 0.68	0.0003
8	Fear of failing	2.91 $\pm$ 0.69	2.92 $\pm$ 0.74	2.91 $\pm$ 0.55	3.43 $\pm$ 0.74	3.07 $\pm$ 0.72	0.00
9	Lack of time for relaxation	2.20 $\pm$ 0.75	1.97 $\pm$ 0.94	3.02 $\pm$ 0.63	3.35 $\pm$ 0.70	2.69 $\pm$ 0.95	0.00
10	Uncertainty about the dental carrier	2.31 $\pm$ 0.60	2.48 $\pm$ 0.50	2.87 $\pm$ 0.60	3.03 $\pm$ 0.81	2.70 $\pm$ 0.71	0.15
11	Expectation verses reality of dental college	2.04 $\pm$ 0.62	2.34 $\pm$ 0.67	2.45 $\pm$ 0.67	2.37 $\pm$ 0.65	2.3 $\pm$ 0.66	0.053
12	Fear of unemployment	2.64 $\pm$ 0.68	2.71 $\pm$ 0.66	2.61 $\pm$ 0.74	2.91 $\pm$ 0.82	2.73 $\pm$ 0.74	0.00
13	Fear of not having possibility to persue a p.g programme	2.28 $\pm$ 0.78	2.28 $\pm$ 0.56	2.70 $\pm$ 0.61	3.17 $\pm$ 0.78	2.6 $\pm$ 0.79	0.5722
14	Availability of assistance of lab technicians during clinical procedure	1.41 $\pm$ 0.60	1.81 $\pm$ 0.82	1.76 $\pm$ 0.78	1.92 $\pm$ 1.02	1.74 $\pm$ 0.85	0.4732
15	Attendance	2.32 $\pm$ 0.63	2.32 $\pm$ 0.67	2.71 $\pm$ 0.65	3.05 $\pm$ 0.72	2.64 $\pm$ 0.74	0.0143
16	Difficulty in learning clinical procedures	2.34 $\pm$ 0.58	2.34 $\pm$ 0.56	2.74 $\pm$ 0.69	3.08 $\pm$ 0.73	2.66 $\pm$ 0.72	0.0124
17	Language barrier	2.04 $\pm$ 0.71	2.37 $\pm$ 0.87	2.23 $\pm$ 0.78	2.33 $\pm$ 0.88	2.25 $\pm$ 0.82	0.0700

## Discussion

Stress has been described as a double-edged sword that can either stimulate and motivate the students to peak performance or reduce the students to ineffectiveness.<sup>13</sup> Previous studies have reported that dental education induces considerable stress on students.<sup>1-5</sup> These findings are almost universal phenomena in different countries with different education systems and curricula. It is difficult to eliminate all the stressful problems in a dental education programme. To become a responsible dental professional, students have to reach high levels of knowledge and professional skill, as well as developing good attitudes towards patient care; all within a short period of time.<sup>13</sup> The present study was conducted to understand better the factors influencing student perception.

Results of the present study showed that overall males perceived more stress than female students, which was in agreement with Acharya<sup>3</sup> and Kumar et al.<sup>9</sup> This may be due to, in India man's income is considered the primary source of earning in the family, and he has to take care of his parents, wife and children. Because of such responsibilities and long tenure of dental profession, men are could be under considerable stress.

While the results of this study do indicate many findings consistent with the international literature, some findings may further enhance the understanding about factors responsible for dental student stress. The current results provide some initial indication of high levels of psychological disturbance in these dental students. Also, the results indicate a general increase in overall student stress levels as the student progresses in the academic program, specifically speaking in the transition into clinical training.<sup>7</sup> However, these are in contrast to the findings reported by Westerman et al.,<sup>1</sup> where the non-clinical years were more stressful.

When comparisons were made for career decision, it was seen that those students who joined dentistry due to parental pressure showed higher stress due to behaviour of the faculty, academic load, fear of unemployment after graduation, and a general lack of confidence, availability of lab technicians. It is possible that students saw the faculty as a mirror image of their overbearing parents and hence the higher dissatisfaction with the faculty would lead to elevated levels of stress. It was noted that stress due to financial concerns was high in this study. This can be explained by the fact that the admission in

dental college needs a immense tuition fee, and many parents finance their children's education through bank loans for which they have to pay a sturdy interest, and the instruments books used during the academic tenure also costs very high which gives the student an anxiety about financial resources, which is in contrast with the study done by Acharya.<sup>3</sup>

There were significant differences between academic years for the items dealing with anxieties about the future- namely uncertainty about the dental carrier, fear of unemployment after graduation, and fear of not having possibility to pursue a post-graduate program, became the top stressors in final year. This was in agreement with Rajab.<sup>5</sup> It was seen that anxiety about the future increased with each passing year and became the second top stressor in the fourth year. This was in agreement with previous studies, where final-year students showed greater anxiety about the future.<sup>3,14</sup>

Fear of failure was the most stressful item across all classes. It was observed that stress due to workload and less time relaxation was consistently high from the first to the third years with a slight dip in the second year. It may be due to the fact that in both the first and third years, the students are exposed to a new dimension in education. It was also seen that stress associated with examinations was high across classes. This abrupt increase in stress was also reported by other authors<sup>4,7,15-17</sup> but was not reported as a key concern by Westerman et al.<sup>1</sup>

Present study showed that students who were forced by their parents showed higher stress levels than those whose first choice was dentistry, which is in accordance with the previous study done by Acharya.<sup>3</sup> This may be due to the fact that these students had both a lack of interest in dentistry and its future scope or were not confident of completing the course, which in turn could have made them have a pessimistic outlook.<sup>3</sup>

The following factors were found to evoke greater stress in females of clinical years: fear of failing a course or a year, examination, and grades; which are in accordance with previous studies.<sup>1,17,18</sup>

Financial recourses were the other aspect about which male students were more concerned than females; no such gender difference was observed by Heath et al.<sup>4</sup> Where as a study by Musser et al.<sup>19</sup> reported a gender difference for financial concerns.

While investigating the nature of accommodation, it is found that hostellers are under elevated



levels of stress than their counterpart those who stay at their homes; this fact may be due to: in times of emergency and hardship, a person can fall back upon his or her family for emotional and material support,<sup>3</sup> which exists in those students who are staying with their family during the course tenure.

It is not surprising that moving away from home was one of the highest ranked stressors only for the first year students, as they begin their degree course. The highest ranking stressor for first-year students was fear of failing course or year. Similar results were found in the study done by Naidu et al.<sup>7</sup>

Identifying possible sources of stress may allow for their alleviation through changes in the curriculum, student and staff (academic and administrative) education, as well as providing resources such as counselling services to those who may require them. Recognition by students of possible stressors may allow them to monitor and assist their stress levels. Also, the Faculty can be engaged with educational specialists in the most recent educational methodologies to maximise student performance and minimise stress.<sup>12,20</sup> The reconsideration of the existing educational system towards a more student-centred orientation could facilitate collaborative learning and interpersonal support amongst students, which may have a protective effect against difficulties faced whilst in dental institution.<sup>21</sup> Fear of failing along with faculty and administration were the highest stress factors among all the years of study; hence a change concerning attitude of staff towards the academic environment where examination and grades are given prime importance may need to be altered as was intended at Tokyo Medical and Dental University (TMDU) where the faculty plans to launch a new curriculum including problem-based learning and early exposure system, along with providing greater flexibility for students to develop their professional attitudes.<sup>13</sup> They designed a new curriculum to enhance students' well-being and academic performance as well as clinical skills for which faculty should conduct workshops for both teaching staff and students in accordance with Tokyo Medical and Dental University.<sup>13</sup>

Another major issue affecting dental education in India is unemployment after graduation. Although other alternatives after graduation including career option abroad and post-graduate studies as the mushrooming of dental colleges has created a demand for post graduate teaching staff. Heavy competition still exists to gain a job abroad or to

achieve admission for postgraduate studies.<sup>9</sup> An appreciation of this data should help dental educators better understand the specific concerns and pressures of the dental student.

It was observed that the "corporal" mindset of the faculty, a legacy of British rule, continues to exist in India. A congenial environment needs to be created by the dental faculty so that students can pursue their studies with less anxiety or fear. This can be achieved by periodic interaction of the dental faculty with trained educational psychologists who can train the faculty in the latest educational methodologies to maximize student performance and minimize stress. Also, parents should be counselled during their children's pre-university period about the ill effects of pressuring them to join an educational program against their wishes. This can be done by seeking the help of the high school authorities in conducting workshops involving parents and teachers on a regular basis. Career fairs can also be used as a forum for parent counselling. If these improvements are introduced, hopefully stress on dental students will be reduced, helping them to be more successful as students and, eventually, as dentists.

## Conclusion

This study was done to assess the perceived sources and factors affecting stress among students in a private dental school in India. Some of the conclusions that could be drawn from the study are:

- Fear of failure was found to be the most stressful item among the students.
- Stress showed an upward trend from the first to the final year with a jump from the second to the third years.
- Men suffered from higher stress than women.
- Those students who joined dentistry due to parental pressure tended to show greater stress.
- Students are staying in hostel were under abundant stress.

## References

1. Westerman GH, Grandy TG, Ocanto RA, Erskine CG. Perceived sources of stress in the dental school environment. *J Dent Educ* 1993; 57(3): 225-31.
2. Atkinson JM, Millar K, Kay EJ, Blinkhorn AS. Stress in dental practice. *Dental Update* 1991; 18: 60-4.
3. Acharya S. Factors affecting stress among Indian dental students. *J Dent Educ* 2003; 67(10): 1140-8.

4. Heath JR, Macfarlane TV, Umar MS. Perceived sources of stress in dental students. *D* 1999; 26(3): 94-8,100.
5. Rajab LD. Perceived sources of stress among dental students at the University of Jordan. *J Dent Educ* 2001; 65(3): 232-41.
6. Freeman R, Main JR, Burke FJ. Occupational stress and dentistry: theory and practice. Part I. Recognition. *Br Dent J* 1995; 178(6): 214-7.
7. Naidu RS, Adams JS, Simeon D, Persad S. Sources of stress and psychological disturbance among dental students in the West Indies. *J Dent Educ* 2002; 66(9): 1021-30.
8. Newton JT, Baghainaini F, Goodwin SR, Invest J, Lubbock M, Marouf SN. Stress in dental school: a survey of students. *Dent Update* 1994; 21(4): 162-4.
9. Kumar S, Dagli RJ, Mathur A, Jain M, Prabu D, Kulkarni S. Perceived sources of stress amongst Indian dental students. *Eur J Dent Educ* 2009; 13(1): 39-45.
10. Hoad-Reddick G, Macfarlane TV, Gibson VM. Relating personality to interview results and performance in the first year of the dental course. *Br Dent J* 1999; 186(7): 348-52.
11. Humphris G. A review of burnout in dentists. *Dent Update* 1998; 25(9): 392-6.
12. Al Omari WM. Perceived sources of stress within a dental educational environment. *J Contemp Dent Pract* 2005; 6(4): 64-74.
13. Sugiura G, Shinada K, Kawaguchi Y. Psychological well-being and perceptions of stress amongst Japanese dental students. *Eur J Dent Educ* 2005; 9(1): 17-25.
14. Polychronopoulou A, Divaris K. Perceived sources of stress among Greek dental students. *J Dent Educ* 2005; 69(6): 687-92.
15. Sanders AE, Lushington K. Sources of stress for Australian dental students. *J Dent Educ* 1999; 63(9): 688-97.
16. Yap AU, Bhole S, Teo CS. A cross-cultural comparison of perceived sources of stress in the dental school environment. *J Dent Educ* 1996; 60(5): 459-64.
17. Garbee WH, Jr., Zucker SB, Selby GR. Perceived sources of stress among dental students. *J Am Dent Assoc* 1980; 100(6): 853-7.
18. Grandy TG, Westerman GH, Lupo JV, Combs CG. Stress symptoms among third-year dental students. *J Dent Educ* 1988; 52(5): 245-9.
19. Musser LA, Lloyd C. The relationship of marital status and living arrangement to stress among dental students. *J Dent Educ* 1985; 49(8): 573-8.
20. Morse Z, Dravo U. Stress levels of dental students at the Fiji School of Medicine. *Eur J Dent Educ* 2007; 11(2): 99-103.
21. Kaufman A, Klepper D, Obenshain SS, Voorhees JD, Galey W, Duban S, et al. Undergraduate medical education for primary care: a case study in New Mexico. *South Med J* 1982; 75(9): 1110-17.