

Perceived sources of stress amongst Indian dental students

S. Kumar, R. J. Dagli, A. Mathur, M. Jain, D. Prabu and S. Kulkarni

Department of Preventive & Community Dentistry, Darshan Dental College and Hospital, Rajasthan, India

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Correspondence

Santhosh Kumar
Department of Preventive & Community
Dentistry
Darshan Dental College and Hospital
Rajasthan
India
Tel: +91 9928714533
Fax: +91 2942452273
e-mail: santosh_dentist@yahoo.com

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Abstract

Introduction: Dental students have to face the additional stress of their studies in addition to the stresses related to dentistry as a profession. Furthermore, increasing stress may result in declining student performance. The aim of the present study was to assess perceived sources of stress amongst dental undergraduate students at a private dental institution in India.

Materials and methods: A modified dental environment stress (DES) questionnaire which consisted of 38 questions was used to assess the levels of stress.

Results: The first major stressor for all the students was examination and grades with a mean score of 2.86 (SD 1.06) followed by full working day, receiving criticism from supervisors about academic or clinical work, amount of cheating in dental faculty, rules and regulations of the faculty and fear of unemployment after graduation. Amongst the six highest stressors in each year, at least three were dental faculty related. There was a significant difference in stress perception between genders with a predilection for males. Twelve of the 38 questionnaire items had significant differences across the year groups including clinical DES items.

Conclusion: The primary sources of stress as perceived by nearly 275 students at one private dental school in India were examinations and grades followed by full working day and receiving criticism from supervisors about academic or clinical work. It appears there is a need for the establishment of student advisors and counsellors combined with a faculty advising system in addition to student-oriented programmes.

Introduction

The term stress describes external demands (physical or mental) on an individual's physical and psychological well-being (1).

Stress in dental students may be multifactorial, arising from both the academic and socio-cultural environment, and attributable to social support issues (emotional and financial). The concerns of clinical students mirror those of qualified practitioners.

There is, however, some evidence documenting the limited effects of external environment on dental students' stress (2) and conflicting data on the impact of stress on the academic performance of dental students (2, 3). Previous investigators have found that 10% of dental students suffered from severe emotional exhaustion, 17% complained about a severe lack of accomplishment and 28% reported severe depersonalisation symptoms (4).

Dental students have to face the additional stress of their studies and student life in addition to the stresses related to

dentistry as a profession and increasing stress may result in declining student performance (5). High levels of stress can result in mental and/or physical ill health, substance misuse, absenteeism and diminished efficiency at work or learning (6–9) and is influenced by a person's system of beliefs and attitudes (10).

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

In a study (11) it was concluded that many factors led to dentistry being particularly stressful: the combination of time pressure, frightened patients, financial problems, staff supervision and the routine and boring work regime.

Dentists suffer from especially high degrees of stress even when compared with other health professions (12, 13). Either diverse and extreme demands or a lack of resources which exceed the person's coping capacities can be viewed as the sources of occupational stress (14).

In chronic or extreme circumstances, occupational stress can precipitate a state of 'burnout' in the susceptible practitioner. Maslach et al. (15) described burnout as a unique response to frequent and intense clinician–patient contacts consisting of three components: emotional exhaustion (mental fatigue), depersonalisation (psychological distancing from others) and reduced personal accomplishment. Dentists who experience burnout are unable to continue working, find the interaction with patients unbearable and withdraw from contact with staff and colleagues (16–18).

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 the dental colleges and is governed by the Dental Council of India. During the first 2 years of graduation, students are taught basic sciences and preclinical dentistry whereas the later years are dedicated for imparting clinical education.

The fee for 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 aim of this study was to determine the perceived sources of stress amongst dental undergraduate students at a private dental institution affiliated to Rajasthan University of Health Sciences, India.

Materials and methods

Participants

The study population comprised undergraduate dental students of first to fourth years enrolled with the Rajasthan University of Health Sciences, India.

Procedure and instrument

Verbal consent was obtained from the respondents and ethical approval for performing the survey was availed from the ethical committee of Darshan Dental College and Hospital.

Stress was measured using a modified dental environment stress (DES) questionnaire (19) which consisted of 38 questions that are applicable to the Indian dental education background.

Questions related to clinical training 3, 4, 10, 16, 18, 19, 25, 26, 27, 28, 29 and 38 were excluded from the questionnaire administered to non-clinical students (first and second year). The response for each question was based on a Likert-type scale with response options of 1 – not stressful, 2 – slightly stressful, 3 – moderately stressful and 4 – severely stressful. The study was conducted during the beginning of the academic year 2006–2007. All undergraduate students were requested to participate in the study except for the internees 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 of the study were explained. The time allocated for completion of the questionnaire was 15 min.

All participants took part in the study voluntarily 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 and

they constituted the exclusion criterion. Along with the questionnaire, students were asked to record data regarding age, gender and year of study.

Statistical analysis

Seven scales (factors) representing various stressors were identified by means of factor analysis. The aim of the factor analysis was to determine whether a smaller number of factors can account for the pattern of correlations between a larger number of variables.

The best factor analysis will have as few factors as possible that represent a set of variables which can be determined using the eigenvalue (factors with the eigenvalue >1 are retained in the factor analysis). It measures the amount of variance in the pool of original variables that the factor explains; the higher this value, the more variance the factor explains.

Scale 1 contains nine statements referring to self-efficacy beliefs (e.g. Completing clinical requirements; Cronbach's alpha for internal consistency between the items was 0.78); scale 2 comprises 10 items dealing with faculty and administration (e.g. Receiving criticism from supervisors about academic or clinical work; Cronbach's alpha – 0.76); scale 3 includes five statements related to workload (e.g. Amount of work assigned; Cronbach's alpha – 0.71); the fourth scale with four items represents statements referring to patient treatment (Lack of cooperation by patient in their home care; Cronbach's alpha – 0.73); a fifth scale includes two statements describing the difficulties in adapting to the specific demands during the period of preclinical and clinical training (Difficulty in learning clinical procedures; Cronbach's alpha – 0.82); the sixth scale pertains to two items that explain the performance pressure (e.g. Examination and grades experienced by the students; Cronbach's alpha – 0.84); and the last scale includes six personal items (Relation with members of the opposite sex, Difficult home/hostel environment in which to study, etc.; Cronbach's alpha – 0.81).

The statistical package for social sciences (SPSS) software was used for data processing and data analysis. Mean values and standard deviations were calculated for each stressor.

Analysis of variance (ANOVA) was used to compare scores by gender, year of study and to determine differences in perception of stress across clinical and preclinical years. Scheffe's test (pair-wise) was used to assess difference between pairs of individual years.

Study population

A total of 275 students (as presented in Table 1) of the 372 registered undergraduate students participated in the study with an overall response rate of 74% whereas overall response rates of males and females of all the years were 70% and 77% respectively.

Results

Demographic profile

Amongst a total of 275 respondents, 121 (44%) were males and the remaining 154 (56%) were females. There was no signifi-

TABLE 1. Sample distribution by year of study and gender

| Year of study | Total | N | Gender | | Response rate (%) |
|---------------|-------|-----|--------|---------|-------------------|
| | | | Males | Females | |
| First year | 100 | 79 | 28 | 51 | 79 |
| Second year | 100 | 55 | 24 | 31 | 55 |
| Third year | 100 | 74 | 38 | 36 | 74 |
| Fourth year | 72 | 67 | 31 | 36 | 93 |
| Total | 372 | 275 | 121 | 154 | 74 |

cant statistical difference in gender distribution from each year ($\chi^2 = 4.11$, d.f. = 3, $P = 0.249$). The mean age for students of all the years ranged between 18.82 (1.17) for first year students to 20.32 (1.07) for the final year students. 21% of the respondents were aged between 22 and 23, most of them belonged to final year and the remaining 79% were aged 20 years and under. There were no students who were older than 23 years. All the students had dentistry as the first choice of admission.

Perceived stressors during dental education

Stress scores for each item per year group are summarised in Table 2. Items that were considered moderately to severely stressful excluding clinical items for all the years were examination and grades (34% of students assigned a stress score of 4 and 29% assigned a stress score of 3), full working day (20% of students assigned a stress score of 4 and 36% assigned a stress score of 3), receiving criticism from supervisors about academic or clinical work (a stress score 4 was assigned by 28% whereas score 3 was assigned by 26%), followed by amount of students cheating in dental faculty, rules and regulations of the faculty and fear of unemployment after graduation.

When the clinical DES items were considered for third and the final years, the greatest stressors with highest mean scores were examinations and grades (36% assigned a score of 4 and 27% assigned score 3) followed by the atmosphere created by clinical supervisors (24% and 35% students assigned scores 4 and 3 respectively) and amount of students cheating by dental faculty (29% of students assigned a score 4 and 26% gave a score 3).

On exclusion of clinical DES items for preclinical years, the highest three stressors were namely examinations and grades (32% assigned a score 4 and 31% a score 3), receiving criticism from supervisors about academic or clinical work (33% assigned a score 4 and 21% gave a score 3) and full working day (16% gave a score of 4 and 37% gave a score 3).

Nine of the thirty-eight questionnaire items had significant differences across year groups with clinical DES items omitted. Significant differences for these nine items were compared across classes using Scheffe's test. As shown in Table 2, the difference was significant only for nine items. Item 18 had significant main effects but no significant *post hoc* differences via Scheffe's test.

Three amongst the twelve clinical items showed a significant difference between years and ANOVA was used for this purpose (Differences in opinion between clinical staff concerning patient treatment, $F = 2.889$ $P = 0.038$ and d.f. = 1; Lack of cooperation by patient in their home care, $F = 8.759$,

$P = 0.0001$ and d.f. = 1 and Patients being late or not showing for their appointments, $F = 8.522$, $P = 0.0001$ and d.f. = 1).

The perception of stress by third year students tended to be higher overall than for their fourth year counterparts. Similarly, first year students had a higher perception of stress than their second year counterparts. Analysis of variance showed significant differences in this direction on three DES questionnaire items (Fear of unable to catch up if getting behind the work, $F = 24.282$, $P = 0.0001$, d.f. = 3; the amount of students cheating in dental faculty, $F = 4.605$, $P = 0.004$ and d.f. = 3; Rules and regulations of the faculty, $F = 5.026$, $P = 0.002$ and d.f. = 3).

Highest six stressors based on course of study and gender

Table 3 summarises the highest six stressors for males and females in preclinical (first and second) and clinical years (third and fourth). Examinations and grades were the first highest stressor for both the genders in both the groups except for females of clinical years for whom the first highest stressor were rules and regulations of the faculty whereas examinations and grades were the fourth highest stressor. Three of the six highest stressors for clinical year groups were faculty related such as amount of student cheating in dental faculty, Atmosphere created by clinical supervisors and differences in opinion between clinical staff concerning patient treatment.

Fear of unemployment after graduation was one of the six highest stressors in all the groups except for the males belonging to clinical years.

Stress factors by gender and year of study

Table 4 gives an overview on the extent of various stress factors experienced according to year of study. Highest contributors for stress in all the years proved to be performance pressure and personal factors.

There was a significant difference between the years of study for performance pressure ($F = 4.663$, $P = 0.003$, d.f. = 3) and personal factors ($F = 3.969$, $P = 0.009$, d.f. = 3).

Performance pressure ($F = 11.102$, $P = 0.0001$, d.f. = 3) along with faculty and administration ($F = 3.652$, $P = 0.013$, d.f. = 3) were the highest stress factors with a significant difference between the genders and course of the study as illustrated in Fig. 1. Performance pressure was noticeably lower in females of clinical years in comparison with other groups. Males belonging to clinical years presented higher stress for faculty and administration in comparison with preclinical students and females of clinical course.

Discussion

The main aim of the present study was to identify the perceived sources of stress amongst dental undergraduate students enrolled at the Rajasthan University of Health Sciences, India, that may provide staff and administrators an opportunity to be proactive in their approach to student stress and to modify the teaching curriculum or environment to be more conducive to the students. Simple parametric tests were used to measure the

TABLE 2. Perceived sources of stress, mean stress scores, standard deviation, and significant differences between years of study

| S. no. | Stress item | First year | Second year | Third year | Fourth year | Significance | Overall |
|-----------------------------------|---|-------------|-------------|-------------|-------------|--------------|--------------|
| Self-efficacy beliefs | | | | | | | |
| 1 | Lack of confidence to be a successful dental student | 2.13 ± 0.92 | 1.64 ± 0.82 | 1.77 ± 0.91 | 1.94 ± 0.97 | 1 > 4,3 > 2 | 1.89 ± 0.93 |
| 2 | Lack of confidence to be a successful dentist | 2.04 ± 1.03 | 1.68 ± 0.77 | 2.07 ± 0.91 | 2.03 ± 0.99 | NS | 1.97 ± 0.95 |
| 3 | Completing clinical requirements | | | 2.20 ± 0.68 | 2.48 ± 0.92 | NS | 2.34 ± 0.81 |
| 4 | Fear of not having possibility to pursue a post graduate dental education programme | | | 2.32 ± 1.04 | 2.23 ± 1.12 | NS | 2.28 ± 1.07 |
| 5 | Lack of confidence in own decision making | 2.10 ± 1.16 | 1.80 ± 0.96 | 1.68 ± 0.83 | 1.79 ± 0.85 | NS | 1.85 ± 0.98 |
| 6 | Fear of failing a course or a year | 2.61 ± 1.08 | 2.02 ± 1.10 | 1.85 ± 1.04 | 2.00 ± 0.99 | 1 > 2,4,3 | 2.14 ± 1.09 |
| 7 | Difficulty in understanding lecture materials | 1.90 ± 0.84 | 2.00 ± 1.04 | 1.97 ± 0.87 | 2.02 ± 0.94 | NS | 1.97 ± 0.91 |
| 8 | Language barrier | 1.49 ± 0.83 | 1.52 ± 0.87 | 1.82 ± 0.86 | 1.62 ± 0.86 | NS | 1.62 ± 0.86 |
| 9 | Fear of unable to catch up if getting behind the work | 2.01 ± 1.07 | 2.02 ± 0.91 | 2.13 ± 0.91 | 1.03 ± 0.17 | 3,2,1 > 4 | 1.80 ± 0.96 |
| Faculty and administration | | | | | | | |
| 10 | Atmosphere created by clinical supervisors | | | 2.77 ± 0.94 | 2.70 ± 0.93 | NS | 2.74 ± 0.93 |
| 11 | Receiving criticism from supervisors about academic or clinical work | 2.76 ± 1.02 | 2.36 ± 1.14 | 2.47 ± 0.86 | 2.64 ± 1.06 | NS | 2.57 ± 1.02 |
| 12 | Amount of cheating in dental faculty | 2.44 ± 1.08 | 2.11 ± 1.02 | 2.78 ± 1.05 | 2.64 ± 1.15 | 3,4 > 1 > 2 | 2.51 ± 1.10 |
| 13 | Rules and regulations of the faculty | 2.27 ± 1.11 | 2.23 ± 1.10 | 2.82 ± 1.03 | 2.56 ± 0.91 | 3 > 4 > 1,2 | 2.48 ± 1.06 |
| 14 | Approachability of teaching staff | 2.08 ± 0.93 | 2.04 ± 0.84 | 1.74 ± 0.79 | 1.92 ± 0.81 | NS | 1.94 ± 0.85 |
| 15 | Expectation of dental faculty and what in reality it is like | 2.24 ± 0.88 | 2.09 ± 1.03 | 2.12 ± 0.74 | 2.14 ± 0.65 | NS | 2.15 ± 0.83 |
| 16 | Availability of supervisors in clinic | | | 2.05 ± 0.83 | 2.15 ± 1.00 | NS | 2.10 ± 0.91 |
| 17 | Attitudes of faculty towards women dental students | 1.65 ± 1.00 | 1.89 ± 1.16 | 1.70 ± 1.09 | 2.12 ± 1.16 | NS | 1.82 ± 1.11 |
| 18 | Shortage of allocated clinical time | | | 2.54 ± 0.78 | 1.56 ± 0.84 | NS* | 2.08 ± 0.95 |
| 19 | Differences in opinion between clinical staff concerning patient treatment | | | 2.39 ± 0.86 | 2.85 ± 0.96 | 4 > 3 | 2.61 ± 0.93 |
| Workload | | | | | | | |
| 20 | Amount of work assigned | 1.91 ± 0.74 | 2.14 ± 0.86 | 1.92 ± 0.70 | 1.95 ± 0.85 | NS | 1.97 ± 0.78 |
| 21 | Full working day | 2.44 ± 0.81 | 2.80 ± 0.96 | 2.73 ± 0.94 | 2.50 ± 1.26 | NS | 2.61 ± 1.00 |
| 22 | Lack of time for relaxation | 2.06 ± 0.99 | 2.05 ± 1.13 | 2.24 ± 1.08 | 2.15 ± 1.06 | NS | 2.13 ± 1.06 |
| 23 | Lack of time to do assigned college work | 1.89 ± 0.89 | 2.19 ± 1.08 | 2.03 ± 0.88 | 2.12 ± 0.90 | NS | 2.04 ± 0.93 |
| 24 | Late ending time | 2.05 ± 0.99 | 1.62 ± 0.97 | 1.97 ± 0.97 | 1.55 ± 0.71 | 1 > 3,2 > 4 | 1.82 ± 0.94 |
| Patient treatment | | | | | | | |
| 25 | Lack of cooperation by patient in their home care | | | 1.68 ± 0.68 | 1.18 ± 0.39 | 3 > 4 | 1.44 ± 0.61 |
| 26 | Responsibilities for comprehensive patient care | | | 1.73 ± 0.71 | 1.64 ± 0.67 | NS | 1.690 ± 0.69 |
| 27 | Patients being late or not showing for their appointments | | | 2.59 ± 0.91 | 1.80 ± 0.93 | 3 > 4 | 2.22 ± 1.00 |
| 28 | Working on patients with dirty mouths | | | 2.45 ± 0.95 | 2.65 ± 1.06 | NS | 2.54 ± 1.01 |
| Preclinical and clinical training | | | | | | | |
| 29 | Difficulty in learning clinical procedures | | | 1.97 ± 0.89 | 2.30 ± 1.04 | NS | 2.13 ± 0.97 |
| 30 | Difficulty in learning precision manual skills required for preclinical and laboratory work | 2.04 ± 0.82 | 1.89 ± 0.71 | 2.11 ± 0.82 | 1.98 ± 0.87 | NS | 2.01 ± 0.81 |
| Performance pressure | | | | | | | |
| 31 | Competition with peers for grades | 2.20 ± 0.97 | 2.55 ± 1.11 | 1.92 ± 0.95 | 1.62 ± 0.67 | 2 > 1 > 3,4 | 2.06 ± 0.98 |
| 32 | Examination and grades | 2.90 ± 1.02 | 2.84 ± 1.02 | 2.93 ± 0.98 | 2.76 ± 1.24 | NS | 2.86 ± 1.06 |
| Other | | | | | | | |
| 33 | Relation with members of the opposite sex | 1.30 ± 0.65 | 2.07 ± 1.16 | 1.28 ± 0.59 | 1.65 ± 0.95 | 2 > 4,1,3 | 1.54 ± 0.89 |
| 34 | Difficult home/hostel environment in which to study | 2.33 ± 1.03 | 1.89 ± 1.13 | 1.76 ± 0.82 | 1.83 ± 0.90 | 1 > 2 > 4,3 | 1.97 ± 1.00 |
| 35 | Fear of unemployment after graduation | 2.18 ± 1.11 | 2.29 ± 1.23 | 2.16 ± 1.08 | 2.23 ± 1.05 | NS | 2.21 ± 1.11 |
| 36 | Financial resources | 2.05 ± 1.10 | 2.34 ± 1.20 | 1.96 ± 0.92 | 1.92 ± 1.01 | NS | 2.05 ± 1.06 |
| 37 | Personal physical health | 1.73 ± 0.92 | 1.83 ± 0.97 | 1.66 ± 0.77 | 1.97 ± 1.10 | NS | 1.79 ± 0.94 |
| 38 | Availability of laboratory technicians | | | 1.78 ± 0.80 | 1.73 ± 0.81 | NS | 1.76 ± 0.80 |

*Significant main effects with no significant *post hoc* differences via Scheffe's test.

stress, hence the reader is expected to be cautious whilst interpreting the results bearing in mind the limitations of parametric tests. It should also be noted that the terms mental health and stress mean different things to people across

different studies and therefore only tentative comparisons should be made with other studies. Furthermore, the response rates from individual years of study were variable and comparisons between years of study should be treated with caution.

TABLE 3. The six highest stressors

| Preclinical years (1 and 2) | | Clinical years (3 and 4) | |
|---|--|---|---|
| Males | Females | Males | Females |
| Examination and grades 2.90 ± 1.11 | Examination and grades 2.86 ± 0.96 | Examination and grades 3.32 ± 0.81 | Rules and regulations of the faculty 2.52 ± 1.0 |
| Full working day 2.67 ± 0.90 | Receiving criticism from supervisors about academic or clinical work 2.60 ± 1.08 | Atmosphere created by clinical supervisors 3.17 ± 0.80 | Amount of cheating in dental faculty 2.46 ± 1.09 |
| Receiving criticism from supervisors about academic or clinical work 2.58 ± 1.09 | Full working day 2.54 ± 0.89 | Amount of cheating in dental faculty 2.97 ± 1.04 | Working on patients with dirty mouths 2.41 ± 1.06 |
| Fear of failing a course or a year 2.38 ± 1.09 | Competition with peers for grades 2.39 ± 1.01 | Full working day 2.96 ± 1.05 | Examination and grades 2.39 ± 1.18 |
| Financial resources 2.35 ± 1.19 | Fear of failing a course or a year 2.35 ± 1.15 | Rules and regulations of the faculty 2.88 ± 0.93 | Differences in opinion between clinical staff concerning patient treatment 2.37 ± 0.97 |
| Amount of cheating in dental faculty 2.31 ± 1.09 | Difficult home/hostel environment in which to study 2.31 ± 1.13 & Fear of unemployment after graduation 2.31 ± 1.17 | Differences in opinion between clinical staff concerning patient treatment 2.86 ± 0.83 | Atmosphere created by clinical supervisors 2.31 ± 0.86 |

Values are mean ± SD according to gender.

TABLE 4. Stress factors by year of study

| S. no. | Factor | First year | Second year | Third year | Fourth year | Significance | Overall | F-value (P) |
|--------|-----------------------------------|-------------|-------------|-------------|-------------|--------------|-------------|---------------|
| 1 | Self-efficacy beliefs | 2.09 ± 0.49 | 1.81 ± 0.45 | 1.98 ± 0.47 | 1.89 ± 0.46 | NS | 1.94 ± 0.48 | 2.958 (0.33) |
| 2 | Faculty and administration | 2.24 ± 0.57 | 2.12 ± 0.56 | 2.34 ± 0.44 | 2.33 ± 0.49 | NS | 2.26 ± 0.52 | 2.456 (0.63) |
| 3 | Workload | 2.07 ± 0.53 | 2.18 ± 0.58 | 2.18 ± 0.49 | 2.06 ± 0.56 | NS | 2.12 ± 0.53 | 1.066 (0.364) |
| 4 | Patient treatment | | | 2.11 ± 0.50 | 1.81 ± 0.50 | NS | 1.97 ± 0.52 | 3.881 (0.011) |
| 5 | Preclinical and clinical training | 2.04 ± 0.82 | 1.89 ± 0.71 | 2.04 ± 0.71 | 2.13 ± 0.78 | NS | 2.03 ± 0.76 | 1.039 (0.376) |
| 6 | Performance pressure | 2.55 ± 0.83 | 2.69 ± 0.75 | 2.42 ± 0.65 | 2.19 ± 0.84 | 4 > 3, 1 > 2 | 2.45 ± 0.79 | 4.663 (0.003) |
| 7 | Personal factors | 1.91 ± 0.64 | 2.07 ± 0.58 | 1.75 ± 0.49 | 1.88 ± 0.62 | 2 > 1, 4 > 3 | 1.89 ± 0.60 | 3.969 (0.009) |

The overall mean stress scores were observed to increase through the year of study with a peak in the third year which is the transition from preclinical to a clinical contact and may represent a problem for many students (20) but this is contrary to a study (21) where students in the first 2 years experienced more stress than students of later years.

The first major stressor for all the students was examinations and grades which is in accordance with previous findings. However a mean score of 2.86 (SD 1.06) is very low when compared with studies from the USA, Singapore, Australia and Jordan where the mean scores were 3.22, 3.14, 3.34 and 3.49 respectively. Students in earlier years tended to have higher levels of stress when compared with later years on items related to academic performance like examinations and grades, competi-

tion with peers for grades and fear of failing a course or a year supported by previous studies (5, 22–24).

Fear of unemployment after graduation was the sixth highest stressor for all years; the reason may be the present trend of dental education in India where approximately 16 000 dentists pass out from 205 dental institutions each year.

Even though the current oral health situation in India features huge unmet treatment needs, job opportunities are scanty as there is no oral health policy in India at the national level, and in many states there are no dental services provided under the public health sector. Consequently, job opportunities for fresh undergraduates are solely concentrated in the private sector where there is an increased competition that would limit their earnings.

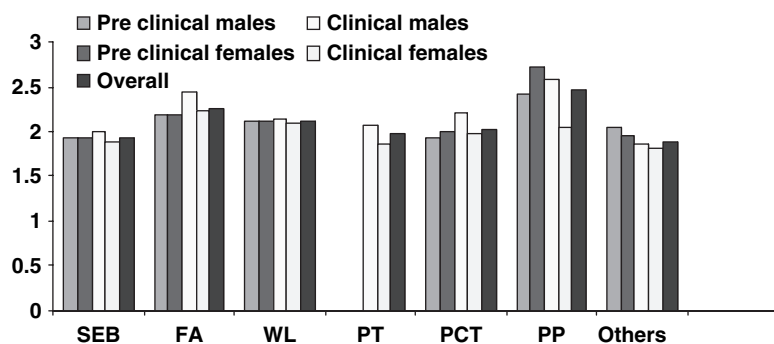


Fig. 1. Stress factors by gender and course of study. SEB, self-efficacy beliefs; FA, faculty and administration; WL, workload; PT, patient treatment; PCT, preclinical and clinical training; PP, performance pressure; personal factors.

Three of the six highest stressors for clinical year group were faculty-related such as amount of student cheating in dental faculty, atmosphere created by clinical supervisors and differences in opinion between clinical staff concerning patient treatment as some faculty members may abuse their privilege and authority. Perception of stress by third year students tended to be higher than for their fourth year counterparts.

Clinical year students generally had higher scores for the educational environment than those in the preclinical 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.

In confirmation with previous surveys (22, 25) 'examinations' were amongst the most potent forms of stress in almost all the years.

A definite relationship between gender and perceived sources of stress was observed: males in preclinical years reported higher levels of stress than females for more than two-thirds of questions. A similar tendency was observed amongst the clinical year students with males reporting higher stress than their female counterparts. A comparable trend was observed by Acharya (26) in his survey on Indian dental students.

The following factors have been found to evoke greater stress in females of clinical years: fear of failing a course or a year, examinations and grades in accordance with previous studies (5, 19, 27).

Financial resource was the other aspect about which male students were more concerned than females; no such gender difference was observed by Heath et al. (22) whereas a study by Musser and Lloyd (28) reported a gender difference for financial concern.

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 a dental institution (29).

A broad spectrum of intervention studies has evaluated such programmes for dental students, including specific courses, stress-reduction sessions, introduction to behavioural sciences and faculty-incorporated advising systems. Howard et al. (30) stated that although some professionals have viewed stress management interventions as 'band-aid' techniques to the overwhelming problem of faculty-induced stress, such techniques do have a significant impact.

Tisdelle et al. (31) support that such training schemes foster coping behaviours that are useful on a daily basis, as well as preventative measures to reduce chronic stress effects. According to Schwartz et al. (32), the establishment of student advisors and counsellors within a dental school, combined with a faculty advising system and student-oriented programmes, have contributed to an improved educational environment.

Performance pressure along with faculty and administration were the highest stress factors amongst all the years of study, hence a change concerning attitudes 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 systems, along with providing greater flexibility for students to develop their professional attitudes. A new curriculum has to be designed 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 TMDU (33).

Faculty can be engaged with educational specialists in the most recent educational methodologies to maximise student performance and minimise stress (8).

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

Very few institutions are implementing courses for placement of dentists abroad after graduation. The present situation can be resolved by effective planning of the workforce and infrastructure, a factor that requires very urgent attention of all concerned.

Conclusions

The primary sources of stress as perceived by dental students were examinations and grades, full working day and receiving criticism from supervisors about academic or clinical work. In the present study, males expressed higher levels of stress, hence a stress reduction programme should be implemented with special attention towards male dental students. Moreover, there was a significant difference in perception of stress for

performance pressure and personal factors between the years of study. It appears there is a need for the establishment of student advisors and counsellors combined with a faculty advising system in addition to student-oriented programmes. Future research is recommended to look at these variables longitudinally to try and achieve a greater understanding of the trajectory of stress through the dental curriculum.

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