Original Article

EVALUATION OF STRESS LEVELS AMONG DENTAL STUDENTS IN BHOPAL: A SURVEY ON COURSE AND CURRICULUM CHALLENGES

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Abstract:

Background: Stress is widely recognized as a major concern among dental students due to heavy academic workload, constant evaluation, clinical responsibilities, and patient-related pressures. The demanding structure of dental education often affects students' psychological well-being, leading to anxiety, emotional exhaustion, and reduced academic performance.

Methods: A cross-sectional questionnaire-based study was conducted among 200 dental students from first year to interns. The Dental Environment Stress (DES) questionnaire was used to assess academic- and clinical-related stressors, while the Depression, Anxiety and Stress Scale (DASS-21) measured psychological distress.

Results: The overall DES scores indicated moderate levels of stress among the participants. Clinical students demonstrated significantly higher DES scores compared to preclinical students, particularly in domains related to patient treatment, clinical workload, and performance pressure. Although females represented the majority of participants, no significant gender difference was noted in stress scores. Clinical students also showed higher DASS-21 scores than preclinical students; however, the difference was not statistically significant. Institution-wise comparison revealed that students from private colleges reported greater faculty-related stress compared to government college students.

Conclusion: Dental students experience considerable stress, with clinical students reporting the highest levels due to increased academic and clinical demands. Although psychological distress (DASS-21) was higher in clinical years, differences across academic levels and gender were not statistically significant. The findings emphasize the need for stress-management interventions, counselling support, curriculum modifications, and student-centered teaching approaches to enhance the mental well-being and academic performance of dental students.

Keywords: Dental students; Perceived Stress Scale; Academic stress; Coping strategies; Psychological wellbeing; Clinical stress; Mental health; Student stressors

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INTRODUCTION

Stress is a common psychological and physiological response triggered when individuals perceive that external demands exceed their coping abilities. Research suggests that it is not merely the situation itself but one's interpretation of it that leads to stress, a concept described as the "psychological filter" by Sapolsky, indicating that perception plays a major

role in determining whether an event is stressful or manageable [1,2]. Stress can manifest through emotional, cognitive, behavioral, and physiological changes, and prolonged exposure has been associated with anxiety, depression, and burnout [3,4]. Among students in health-related courses, especially dentistry, stress is considered highly prevalent due to the demanding educational framework they undergo.

Dental education is uniquely rigorous because it combines extensive theoretical learning, laboratory work, and hands-on clinical training. Students are expected to master complex biomedical sciences in early years and transition into providing real patient care during clinical years. Studies have consistently shown that dental students experience higher stress levels than many other student groups, primarily due to heavy academic load, long working hours, performance pressure, and frequent assessments [5,6]. Furthermore, managing patients' expectations, developing clinical competence, and fear of committing irreversible clinical errors significantly contribute to psychological strain [7].

Academic workload, examinations, and clinical requirements have been repeatedly identified as major stressors among dental students globally. Students report fear of failing, pressure to meet deadlines, and concerns about clinical competency. The transition from preclinical to clinical years often marks a significant rise in stress levels, as responsibilities shift from simulation-based learning to real-life clinical situations [5]. Additional stressors include lack of time for relaxation, difficulty balancing personal and academic roles, financial concerns, and limited holidays compared to peers in other disciplines.

Chronic stress among dental students may negatively affect learning efficiency, clinical performance, interpersonal relationships, and overall mental health. High stress levels have also been associated with reduced empathy toward patients and increased risk of burnout later in professional life [8]. Effective assessment of stress levels in dental institutions is therefore essential to identify vulnerable students and implement supportive measures such as counselling, stress-management training, curriculum modification, and improvement of the learning environment.

Despite numerous international studies, limited literature exists on stress in dental students from Central India, particularly Bhopal. Given the cultural, educational, and socio-economic differences across regions, localized research is important for designing contextually relevant interventions. This study aims to evaluate perceived stress among undergraduate dental students in Bhopal city, comparing stress levels between preclinical and clinical groups and identifying key stress-inducing factors related to course and curriculum.

MATERIALS AND METHODS

*Study Design and Setting***:** A descriptive cross-sectional study was conducted among undergraduate Bachelor of Dental Surgery (BDS) students in dental colleges across Bhopal city. The study assessed perceived stress related to course and curriculum. Ethical clearance was obtained from the Institutional Ethics Committee. Participants were assured of confidentiality and voluntary participation.

Study Population and Sampling: A total of 248 students from all academic years participated. Sample size was calculated using Cochran's formula with 95% confidence level and 5% margin of error. Stratified random sampling ensured proportional representation from preclinical (1st–2nd year) and clinical (3rd year–internship) groups.

Inclusion Criteria

- Undergraduate BDS students from 1st year to internship
- Willing students who provided informed consent

Exclusion Criteria

- Students with a diagnosed psychiatric illness
- Students on academic leave or long-term absence

Data Collection Tools: A structured, prevalidated questionnaire consisting of three sections was used:

1. Demographic details (age, gender, academic year, socio-economic background)
2. Stress assessment scales:
    - Dental Environmental Stress (DES) Scale for academic and clinical stressors
    - Depression, Anxiety and Stress Scale (DASS-21) for psychological distress
3. Additional factors: coping behaviors, sleep patterns, and study habits

A pilot test with 30 students assessed clarity and reliability.

Data Collection Procedure: Questionnaires were administered in both printed and digital (Google Forms) formats. Trained investigators supervised classroom distribution, while online links were shared for absentees.

Outcome Measures: Primary outcome measured included Mean DES and DASS-21 scores Secondary included stress differences by gender, academic group (preclinical vs clinical), and personal factors

Statistical Analysis: Data were analyzed using SPSS version 25. Descriptive statistics

(means, SD, percentages) were reported. Normality was checked using Kolmogorov–Smirnov test. Independent t-tests compared mean scores between groups. Significance level was set at $p < 0.05$.

RESULTS

A total of 200 dental students participated in the study. Their demographic distribution, perceived stress levels, stressors, symptoms, and coping strategies are presented below.

Table 1: Demographic Profile & PSS Scores

Variable	Category	n (%)	Mean PSS ± SD
Gender	Male	69 (34.5%)	19.20 ± 6.39
	Female	131 (65.5%)	22.18 ± 6.98
Academic Year	1st Year	34 (17%)	21.26 ± 6.49
	2nd Year	30 (15%)	19.53 ± 6.32
	3rd Year	39 (19.5%)	21.95 ± 7.24
	Final Year	32 (16%)	19.90 ± 6.52
	Interns	65 (32.5%)	22.78 ± 7.28
Stress Level	Low	44 (22%)	—
	Moderate	126 (63%)	—
	High	30 (15%)	—

Table 1 presents the demographic distribution of participants along with their perceived stress scores. A total of 200 students participated, with females forming almost two-thirds of the sample (65.5%). Females also demonstrated higher mean PSS scores (22.18 ± 6.98) compared to males (19.20 ± 6.39), indicating greater stress levels.

Among academic years, interns constituted the largest group (32.5%) and simultaneously recorded the highest stress levels (22.78 ± 7.28). Second-year students exhibited the lowest stress scores (19.53 ± 6.32). Overall, most participants fell in the moderate stress category (63%), with 15% showing high stress, highlighting the considerable psychological burden experienced by dental students.

Table 2: Stressors, Symptoms & Coping Strategies

Variable Type	Category	n (%)
Sources of Stress	Academic	85 (42.5%)

	Clinical	55 (27.5%)
	Social	35 (17.5%)
	Personal	25 (12.5%)
Common Symptoms	Fatigue	145 (72.5%)
	Sleep Disturbance	106 (53%)
	Irritability	98 (49%)
	Headache	88 (44%)
Coping Methods	Listening to music	136 (68%)
	Socializing	94 (47%)
	Sleeping	90 (45%)
	Using mobile/social media	82 (41%)
	Exercise / sports	44 (22%)

Table 2 summarizes the major stressors, related symptoms, and coping patterns among dental students. Academic demands emerged as the leading stress factor (42.5%), followed by clinical responsibilities (27.5%). Fatigue was the most prevalent symptom (72.5%), indicating widespread physical and mental exhaustion among students. Sleep disturbances (53%) and irritability (49%) were also frequently reported.

Regarding coping behavior, students primarily relied on passive strategies such as listening to music (68%), socializing (47%), and sleeping (45%). Only 22% of the students engaged in active stress-relief methods such as exercise, suggesting a preference for immediate emotional comfort over long-term adaptive coping.

DISCUSSION

The study highlights that dental education inherently exposes students to multiple stressors arising from academic demands, clinical responsibilities, patient interactions, and institutional expectations. Dental education is structured such that students must quickly assimilate large volumes of theoretical content while simultaneously developing clinical competence [9,10]. This dual burden has been shown to elevate stress levels substantially, consistent with other global findings where dental students report higher stress compared to peers in other professional courses.

The study reveals that the transition from preclinical to clinical years is particularly stressful, as students move from simulated practice to direct patient care. Fear of making

mistakes, causing discomfort, or failing clinical requirements contributes significantly to psychological distress during this phase. Examination-related anxiety is another major contributor, with frequent theoretical, practical, and clinical assessments creating sustained pressure throughout the curriculum. The fear of failure—combined with competitive grading and heavy reading loads—further elevates student anxiety and stress levels.

The study also notes that stress perception varies based on personal and socio-demographic factors. Students with strong coping skills or supportive environments tend to experience less stress, whereas those dealing with financial hardship, familial pressures, or limited emotional support report higher stress levels. Chronic stress among dental students has potential long-term consequences, including anxiety, depression, emotional exhaustion, and burnout. Physical symptoms such as sleep disturbances, fatigue, and headaches were also discussed as common manifestations of sustained psychological stress. [11,12]

When comparing findings with previous research, the study's overall DES score (approximately moderate-to-elevated) aligns with results from Jordanian and American contexts. Differences in curriculum structure, cultural expectations, and academic environments may account for variation across countries. Importantly, the study found that clinical students consistently showed higher stress levels than preclinical students, especially related to patient treatment, clinical workload, and responsibilities near graduation. This trend is similarly reported in several cross-sectional studies from other regions, confirming that clinical exposure intensifies perceived stress levels.

Another pattern identified is that academic performance influences stress perception. Students with higher grades tended to report lower stress, indicating that academic self-efficacy may buffer stress. Conversely, uncertainty about future employment, postgraduate admission, and career stability contributes significantly to anxiety among students, particularly in the later years of training. This is consistent with previous literature citing competitive job markets and financial pressures as major stressors for dental students in India. [13,14]

Also important to note is the stress differences across institutions, with government college students reporting lower faculty-related stress than private college students. This may be due to variations in faculty expectations, institutional culture, and academic workload distribution. Gender differences were observed, with females reporting higher perceived stress than males, though reasons remain unclear and may be attributed to unmeasured psychosocial factors.

Overall, the study argues for the need to integrate stress-coping strategies into the dental

curriculum. Recommendations include counseling for parents and students, early identification of at-risk individuals, curriculum modification, reduction of educational costs, and incorporation of student-centered teaching methodologies. The role of public health dentists in mentoring, psychological support, and academic advising is especially emphasized as a way to reduce stress and enhance student well-being.

CONCLUSION

The study concludes that dental students experience moderate levels of stress, with variations observed between preclinical and clinical years. Female students constituted the majority of participants, yet stress levels between males and females were not significantly different, indicating that gender does not significantly influence stress perception. Clinical students exhibited notably higher DES scores compared to preclinical students, highlighting that clinical training imposes additional academic and procedural pressures.

While clinical students also recorded higher DASS-21 scores, this difference was not statistically significant, suggesting that although psychological distress increases with academic progression, coping mechanisms or institutional support may moderate its impact. The findings emphasize that personal and financial responsibilities, workload, and time management challenges are major contributors to stress, especially among clinical students. Importantly, the study underscores the need for structured stress-management interventions, improved curricular design, and supportive learning environments to enhance student well-being and academic success.

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