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Assessment of Psychological Stress Levels Among First-Year Undergraduate Dental Students: A Cross-Sectional Questionnaire-Based Study

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Abstract

Background: Dental students often experience psychological stress due to academic pressure, examinations, and adapting to a new learning environment. First-year students are particularly vulnerable to this transition.

Methods: A cross-sectional study using a questionnaire was conducted with 114 first-year undergraduate dental students to assess their stress.

Results: Most students (40.4%) reported moderate stress, followed by high (30.7%) and low (28.9 %) stress. Female students made up the majority of participants (91.2%), while male students had slightly higher mean stress scores.

Conclusion: A significant number of first-year dental students experienced moderate-to-high stress. Academic workload and transition to the dental curriculum likely contribute to this stress.

Keywords: Psychological stress, Dental students, Academic stress, First-year students, Dental education

I. INTRODUCTION

Psychological stress is common among students studying professional courses, specifically dentistry, where their academic load is often reported to be high to moderate. The shift from school to college exposes students to novel experiences and intense academic expectations, resulting in considerable early stage stress. (2) STRESS can be understood as a situation in which a person feels that the work demands are more than their personal abilities and capabilities to cope. It affects both mental and physical health if not addressed or assessed on time (5). In dental students, this is observed because of the demanding nature of the course. The 1st year of dental education is a very important phase because students enter a completely new environment. They must adjust to new subjects, different study patterns, and higher expectations and performance pressure. Many students find this transition difficult, which can lead to stress and affect their performance and well-being (2, 4). Different factors, such as academic pressure, exam fear, and new syllabus, are the main reasons for stress among dental students. Similar findings have been reported in different studies, which show that stress in students is a common problem and not limited to just one place (3, 6).

Identifying stress at an early stage is important so that support and coping strategies can be provided. Understanding the stress levels in first-year students can help in better planning and execution of various support systems for their mental health and well-being. Therefore, the present study was conducted to assess psychological stress levels among 1st year UG dental students and to identify the major stressors experienced during this period.

II. MATERIALS AND METHODS

Material and methods of This cross-sectional study was conducted among first-year undergraduate dental students. To meet the statistical requirements, the lower threshold for the sample size was established at 108. However, a total of 114 students participated in this study. Data were collected using a structured, self-administered questionnaire designed to assess psychological stress and associated factors among students. Participation in the study was voluntary and anonymous, and responses were collected and analyzed.

III. ETHICAL CONSIDERATION

544/SMBT/04/171/2023 Number for ethical approval from the IEC.

IV. RESULTS

114 1st year students participated in the survey, of which 104 (91.2%) were female and 10 (8.8%) were male, as presented in figure 1. The age of the participant ranged between 18 and 21 years, as presented in figure 2. In this study, we found that the majority of students (40.4%) reported moderate stress, 30.7% reported high stress, which is a substantial amount, and 28.9% reported low stress. The statistics for the stress level and stress score are presented in Table 1 and figure 3. Nearly 71% of students (moderate + high) experienced elevated stress levels, highlighting that stress is a major issue among first-year dental students, but most dental students never sought help from a counsellor. Of the 114 students, 78 found the curriculum challenging, which occasionally caused stress. One of the major causes of stress was workload, reported by 46.5% of students as often or almost often. A total of 30.7% students felt very anxious during clinical procedures, which was mainly due to a lack of practice. Academics are challenging, but personal issues also lead to stress, reported by 28.9% of students as high and 38.6% as moderate. Of the participants, 53.5% reported that supportive family members helped reduce stress. Other findings were that stress affects academic performance, most students do not find it hard to balance work and life, and most students do not feel intimidated by staff. Refer to the figures and tables for the statistics of the questionnaire. Chi squared test was used to do comparison between male and female students' responses and it was found that there is no significant difference between male and female participant responses which is further presented in detail for each question in table 13. At-test was used to compare stress scores between male and female participants, and we obtained $t\text{-stat}=0.828$ and $p\text{-value}=0.409$, which shows that there is no significant difference in stress scores between male and female participants.

Figure 1: Demographic of participants

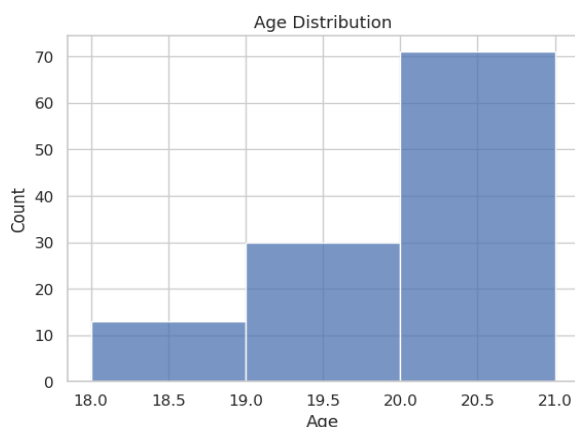


Figure 2: Age Distribution

Figure 2 shows that most participants belonged to the age group 20 to 21 and whole population age group is between 18 to 21 years old.

Table 1: Stress Score Statistics

	StressScore
count	114.000000
mean	3.126621
std	0.882864
min	1.000000
25%	2.565217
50%	3.086957
75%	3.608696
max	5.000000

Table 1: The mean stress score among the participants was 3.13 ± 0.88 , indicating an overall moderate level of stress. The median stress score was 3.09, suggesting that the distribution of stress scores was fairly symmetrical. The stress scores ranged from a minimum of 1.00 to a maximum of 5.00, reflecting a wide variability in perceived stress among students. Additionally, 50% of the participants had stress scores between 2.57 and 3.61, indicating that the majority experienced moderate stress levels.

Figure 3: Stress Level Statistics

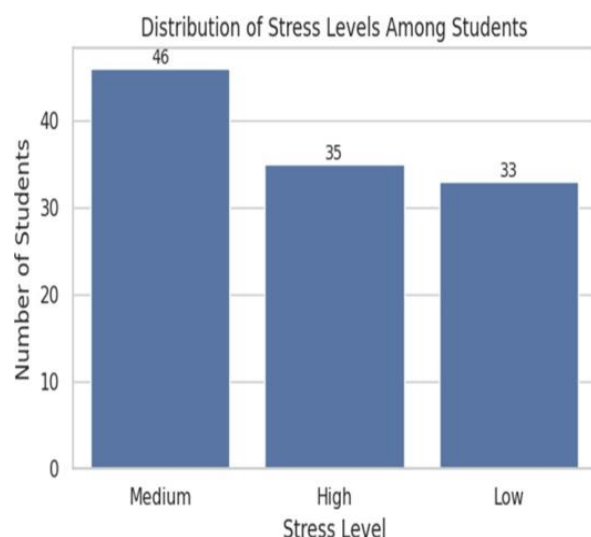
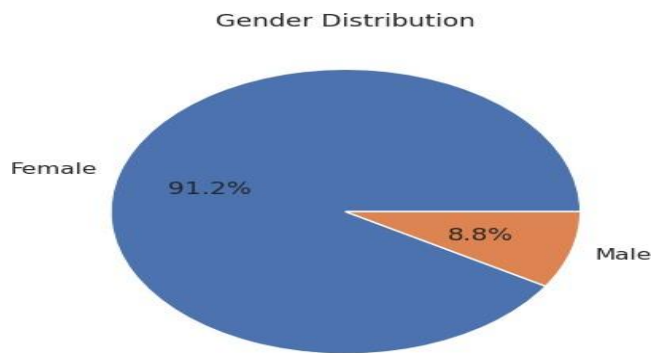


Figure 3 shows that majority students (71%) reported moderate and high stress levels.

Questionnaire And Response Statistics:-

Table 2: How often do you feel overwhelmed by your academic workload? - (Scale: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Almost Always)



Overwhelmed by workload	F	M
1	5 (4.81%)	0 (0.0%)
2	10 (9.62%)	2 (20.0%)
3	40 (38.46%)	4 (40.0%)
4	42 (40.38%)	3 (30.0%)
5	7 (6.73%)	1 (10.0%)

This shows that feeling overwhelmed is a common and frequent experience for dental students, with a significant majority falling into the "often" or "sometimes" categories.

Table 3: How challenging do you find the dental curriculum? - (Scale: 1 = Not Challenging, 2 = Somewhat Challenging, 3 = Challenging, 4 = Very Challenging, 5 = Extremely Challenging)

Curriculum challenge	F	M
1	3 (2.88%)	0 (0.0%)
2	30 (28.85%)	3 (30.0%)
3	48 (46.15%)	6 (60.0%)
4	20 (19.23%)	1 (10.0%)
5	3 (2.88%)	0 (0.0%)

Majority of students find the curriculum challenging only sometimes. Many find it challenging "rarely" and "often". This suggests a moderate and variable perception of academic challenge, with most students feeling challenged occasionally but not constantly.

Table 4: Have you ever felt pressure from faculty members or peers to perform well academically? -

(Scale: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Almost Always)

Pressure from faculty/peer	F	M
1	14 (13.46%)	1 (10.0%)
2	22 (21.15%)	0 (0.0%)
3	43 (41.35%)	5 (50.0%)
4	20 (19.23%)	3 (30.0%)
5	5 (4.81%)	1 (10.0%)

This suggests that external pressure from faculty and peers is present, but not constant, with most students feeling it occasionally, and a notable portion feeling it frequently.

Table 5: How often do you feel anxious or stressed during clinical procedures? - (Scale: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Almost Always)

1	15 (14.42%)	2 (20.0%)
2	21 (20.19%)	3 (30.0%)
3	35 (33.65%)	3 (30.0%)
4	23 (22.12%)	1 (10.0%)
5	10 (9.62%)	1 (10.0%)

Majority of students feel anxiety Sometimes but there is high variability in responses. A significant portion experiences anxiety frequently or almost always, while another portion feels little to none.

Table 6: Have you ever felt intimidated or unsupported by clinical instructors or staff? - (Scale: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Almost Always)

Intimidated unsupported by staff	F	M
1	36 (34.62%)	4 (40.0%)
2	29 (27.88%)	1 (10.0%)

3	28(26.92%)	3(30.0%)
4	7(6.73%)	0(0.0%)
5	4(3.85%)	2(20.0%)

The majority of students rarely or never feel intimidated by staff, which is a positive sign for the overall learning environment. But many have answered "sometimes" and also a small portion of students have answered "often" and "almost always" which suggests that intimidation is not the norm, but it is not negligible either.

Table 7: How often do you feel stressed or overwhelmed by personal issues (e.g., relationships, family, finances)? - (Scale: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Almost Always)

Stress_from_personal_issues	F	M
1	13 (12.5%)	1 (10.0%)
Anxiety_during_clinical_procedures	F	M
		)
2	21 (20.19%)	2 (20.0%)
		)
3	40 (38.46%)	4 (40.0%)
		)
4	22 (21.15%)	0 (0.0%)
		)
5	8 (7.69%)	3 (30.0%)
		)

This shows majority of students feel stress due to personal issues. Most answered "sometimes" and a

substantial amount of students answered "often" and "almost always".

Table 8: Have you ever felt like you're struggling to balance your personal and academic life? - (Scale: 1=Never, 2=Rarely, 3 = Sometimes, 4 = Often, 5 = Almost Always)

Struggle_balancing_personal_academic_life	F	M
1	11 (10.58%)	0 (0.0%)
2	24 (23.08%)	1 (10.0%)
3	34 (32.69%)	5 (50.0%)
4	23 (22.12%)	2 (20.0%)
5	12 (11.54%)	2 (20.0%)

The majority of students either never, rarely, or only sometimes struggle to balance academic and personal life. Only few students feel this struggle "often" or "almost always".

Table 9: How supportive do you feel your friends and family are during difficult times? - (Scale: 1 = Not Supportive, 2 = Somewhat Supportive, 3 = Supportive, 4 = Very Supportive, 5 = Extremely Supportive)

Family_friends'_support	F	M
1	1 (0.96%)	0 (0.0%)
2	16 (15.38%)	0 (0.0%)
3	31 (29.81%)	5 (50.0%)
4	22 (21.15%)	3 (30.0%)
5	34 (32.69%)	2 (20.0%)

Most student answer red that their family and friends are supportive.

Table 10: Have you ever felt like you can openly discuss your stress or anxiety with your peers or instructors? - (Scale: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5= Almost Always)

Openness_about_stress_with_peers_instructors	F	M
1	20 (19.23%)	4 (40.0%)
2	20 (19.23%)	2 (20.0%)
3	39 (37.5%)	4 (40.0%)
4	15 (14.42%)	0 (0.0%)
5	10 (9.62%)	0 (0.0%)

Most answered "sometimes" and as substantial amount of students answered "never" or "rarely". This shows students don't feel that they can openly discuss about stress with their peers.

Table 11: How do you perceive stress or anxiety affecting your overall well being?-

Stress_affecting_well-being	F	M
1	8 (7.69%)	0 (0.0%)
2	28 (26.92%)	1 (10.0%)
3	43 (41.35%)	5 (50.0%)
4	21 (20.19%)	3 (30.0%)
5	4 (3.85%)	1 (10.0%)

Most answered that stress and anxiety is affecting their overall well being.

Table 12: Have you ever felt like stress or anxiety is impacting your academic performance? - (Scale: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Almost Always)

Stress_impacting_academic_performance	F	M
1	8 (7.69%)	2 (20.0%)
2	19 (18.27%)	1 (10.0%)
3	47 (45.19%)	4 (40.0%)
4	21 (20.19%)	1 (10.0%)
5	9 (8.65%)	2 (20.0%)

Most answered that stress and anxiety is affecting their academic performance.

Figure 4: Major Factor Affecting Stress

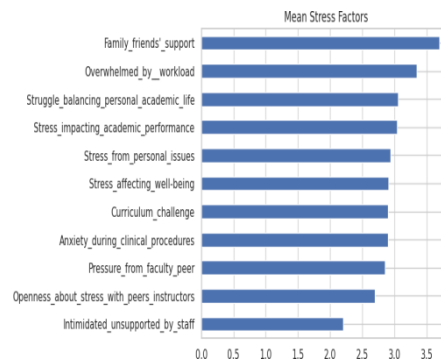


Figure 4 shows us major factors affecting stress. Family and friends support helping to reduce stress while overwhelming workload, academic life balance, academic pressure cause increase in stress.

Table 13: Chi Squared Statistics Table

SurveyQuestions	Respond/option	Female N(%)	Male N(%)	Chi-Square Value	P-value
How often do you feel overwhelmed by		5	0		0.771
Your academic workload?	Never	(4.8%)	(0.0%)	1.809	(NS)
	Rarely	10 (9.6%)	2 (20.0%)		
	Sometimes	40 (38.5%)	4 (40.0%)		

		42	3		
	Often	(40.4%)	(30.0%)		
		7	1		
	Almost Always	(6.7%)	(10.0%)		
How challenging do you find the dental curriculum?		3	0		0.849
	Not Challenging	(2.9%)	(0.0%)	1.372	(NS)
	Somewhat	30	3		
	Challenging	(28.3%)	(30.0%)		

	g	8%)	0%)		
		48	6		
	Challengin g	(46. 2%)	(60. 0%)		
		20	1		
	VeryChall enging	(19. 2%)	(10. 0%)		
	Extremely	3	0		
	Challengin g	(2.9 %)	(0.0 %)		
Haveyoueverfeltpressur efromfaculty					
Membersorpeers toperf ormwell		14	1		0.5 01
academically?	Never	(13. 5%)	(10. 0%)	3.3 52	(NS)
		22	0		
	Rarely	(21. 2%)	(0.0 %)		
		43	5		
	Sometim es	(41. 3%)	(50. 0%)		
		20	3		
	Often	(19. 2%)	(30. 0%)		
		5	1		
	AlmostAl ways	(4.8 %)	(10. 0%)		
Howoften do youfeelanxiousorstresse d		15	2		0.8 65
Duringclinical procedures?	Never	(14. 4%)	(20. 0%)	1.2 81	(NS)
		21	3		
	Rarely	(20. 2%)	(30. 0%)		
		35	3		
	Sometim es	(33. 7%)	(30. 0%)		
		23	1		
	Often	(22. 1%)	(10. 0%)		
		10	1		
	AlmostAl ways	(9.6 %)	(10. 0%)		
Haveyoueverfeltintimid atedor					
Unsupportedbyclinicali nstructorsor		36	4		0. 1 7
staff?	Never	(34. 6%)	(40. 0%)	6.4 12	(NS)
		29	1		
	Rarely	(27. 9%)	(10. 0%)		
		28	3		
	Sometim	(26.)	(30.)		

	es	9%)	0%)		
		7	0		
	Often	(6.7 %)	(0.0 %)		
		4	2		
	AlmostAl ways	(3.8 %)	(20. 0%)		
Howoftendoyoufeelstre ssedor					
Overwhelmedbyperson alissues (e.g.,		13	1		0.1 43
relationships,family,finan ces)?	Never	(12. 5%)	(10. 0%)	6.8 72	(NS)
		21	2		
	Rarely	(20. 2%)	(20. 0%)		
		40	4		
	Sometim es	(38. 5%)	(40. 0%)		
		22	0		
	Often	(21. 2%)	(0.0 %)		
	AlmostAl ways	8	3		
		(7.7 %)	(30.0 %)		
Have you ever felt like you're struggling to balance your personal and academic		11	0		0.5 38
life?	Never	(10.6 %)	(0.0 %)	3.11 8	(NS)
		24	1		
	Rarely	(23.1 %)	(10.0 %)		
		34	5		
	Sometim es	(32.7 %)	(50.0 %)		
		23	2		
	Often	(22.1 %)	(20.0 %)		
		12	2		
	Almost Always	(11.5 %)	(20.0 %)		
Have you ever sought help from a		74	5		0.3 98
counselor or mental health professional?	Never	(71.2 %)	(50.0 %)	4.06 1	(NS)
		13	2		
	Rarely	(12.5 %)	(20.0 %)		
		12	2		
	Sometim es	(11.5 %)	(20.0 %)		
		3	0		
	Often	(2.9 %)	(0.0 %)		

		2	1		
	Almost Always	(1.9 %)	(10.0 %)		
How supportive do you feel your friends and family are during difficult times?	Not Supportive	(1.0 %)	(0.0 %)	3.603	(NS)
	Somewhat	16	0		
	Supportive	(15.4 %)	(0.0 %)		
		31	5		
	Supportive	(29.8 %)	(50.0 %)		
		22	3		
	Very Supportive	(21.2 %)	(30.0 %)		
	Extremely	34	2		
Have you ever felt like you can openly discuss your stress or anxiety with your peers or instructors?	Supportive	(32.7 %)	(20.0 %)		
	Never	(19.2 %)	(40.0 %)	4.291	(NS)
		20	2		
	Rarely	(19.2 %)	(20.0 %)		
		39	4		
	Sometimes	(37.5 %)	(40.0 %)		
		15	0		
	Often	(14.4 %)	(0.0 %)		
		10	0		
	Almost Always	(9.6 %)	(0.0 %)		
How do you perceive stress or anxiety affecting your overall well being?	Not at All	(7.7 %)	(0.0 %)	3.163	(NS)
		28	1		
	Somewhat	(26.9 %)	(10.0 %)		
		43	5		
	Moderately	(41.3 %)	(50.0 %)		
		21	3		
	Very Much	(20.2 %)	(30.0 %)		
		4	1		
	Extremely	(3.8 %)	(10.0 %)		
Have you ever felt like stress or anxiety is		8	2		0.449

impacting your academic performance?	Never	(7.7 %)	(20.0 %)	3.694	(NS)
	Rarely	19	1		

	(18.3%)	(10.0%)
	47	4
Sometimes	(45.2%)	(40.0%)
	21	1
Often	(20.2%)	(10.0%)
	9	2
Almost Always	(8.7%)	(20.0%)

Table 13 shows that every question has a p-value < 0.05, which conveys that there is no significant difference between females and males. responses.

V. DISCUSSION

The present study assessed psychological stress among first-year undergraduate dental students and found that most students experienced moderate-to-high stress levels. This finding is similar to those of previous studies that have reported that dental students commonly experience stress due to academic demands (1,3).

In this study, moderate stress was the most common, followed by high-stress levels. This is comparable with other studies, which suggest that students experience considerable stress during the early phases of dental education (2,4). The transition to a new academic environment may be a contributing factor.

Academic workload, examinations, and difficulty balancing personal and academic lives were identified as the main stressors. These findings are consistent with previous research, which has consistently reported academic pressure as a major cause of stress among dental students (3,6).

Gender-wise analysis showed a slight difference, with male students having slightly higher stress scores than female students. However, previous studies have shown mixed findings regarding sex differences, indicating that such variations may not always be consistent (1,6).

Stress occurs when individuals perceive that the demands placed on them exceed their ability to cope, which can impact their overall health (5). This is evident in dental education, owing to its demanding nature.

Overall, the findings suggest that psychological stress is present in the early stages of dental education, highlighting the need for early

identification and supportive interventions. Main issues the college institutions should focus on-

1. **Counselling Awareness:** Most students reported not going to a counsellor, even though stress is common. This might be because of social stigma or fear of judgment associated with seeking psychological help, and they might also not be aware of the available counselling services. Institutions may need to proactively integrate mental health awareness into their curricula and reduce barriers to seeking help. More interactions between the counsellor should be established through seminars.

2. **Overwhelming Workload:** The volume and intensity of tasks appear to be the main causes of stress. This may include long study hours, clinical/practical duties, assignments, and exam preparation. A high workload with frequent overwhelm can contribute to chronic stress, burnout, reduced motivation, and even mental health issues. Students likely need training in prioritization, task management, and study-scheduling. Institutions should consider integrating academic coaching and productivity workshops.

3. **Supportive Faculty:** The learning environment is as important as the curriculum for students. Factors of the learning environment, such as high expectations, comparison and competition among peers, and strict or unsupportive staff, contribute to stress. Conducting faculty development programs that include topics such as student mental health awareness, compassionate communication, and constructive feedback methods. Peer mentorship programs, buddy systems, and collaborative learning groups may shift dynamics from competition to support.

4. **Anxiety During Clinical Procedures:** Anxiety could be due to feeling unprepared for real patients, lack of practice, harsh supervision, and strict grading. A competitive or hypercritical environment can intensify anxiety. Targeted mentoring or clinical counseling for those in "Often" and "Almost Always." More pre-clinical simulation time, shadowing opportunities before independent work, and faculty awareness of anxiety cues can help. Organizing peer-sharing sessions where confident students talk about how they reduced their clinical anxiety could help normalize the experience and offer real tips.

5. **Personal And Academic Life Balance:** For students who are struggling, colleges can provide 1 one-on-one counselling sessions, academic life balance seminars, and encourage habits such as planning breaks and personal time, and promoting hobbies and extracurricular activities.

VI. CONCLUSION:

First-year undergraduate dental students experience moderate to high levels of psychological stress, with academic workload and examinations being the main contributing factors of this stress. These findings highlight the importance of implementing stress management strategies and supportive systems to improve students' well-being.

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