

## STRESS TRIGGERS SYSTEMIC DISEASES AMONG BDS STUDENTS -A QUESTIONNAIRE BASED STUDY

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### Abstract: -

#### Introduction:

Students studying BDS experience higher stress than the general population due to demanding academic, clinical, and interpersonal requirements. Stress arises from time pressure, technical workload, and patient management, adversely affecting physical and psychological wellbeing and academic performance. Prolonged occupational stress may lead to burnout.

**Aims and Objectives:** To evaluate the relationship between stress triggers and systemic diseases based on the levels of stress, among BDS students by means of questionnaire-based study.

objectives included identifying common stressors and symptoms, assessing the occurrence of stress-related systemic diseases, exploring coping mechanisms, and proposing strategies for stress management.

**Methodology:** A cross-sectional observational study was conducted among 931 BDS students from first year to internship. Stress levels were assessed using a structured Perceived Stress Scale (PSS) questionnaire administered through interviews by the principal investigator. Participation was voluntary with verbal consent, and ethical committee approval was obtained. Students with pre-existing systemic diseases before joining BDS were excluded from the study.

**Observations and Results:** The findings showed that 78.5% of students experienced moderate stress, 19.0% low stress, and 2.5% high stress levels, consistent with previous literature. Academic pressure, including managing clinical work and academic workload, was a major contributing factor. Due to the young age group (approximately 25 years), fewer systemic diseases were observed, representing a limitation of the study.

**Conclusion:** The study demonstrates a clear relationship between stress and personal health among dental students, with the majority experiencing moderate stress. Academic demands and reduced interest in dentistry contribute significantly to stress. Early identification of stressors and implementation of effective coping strategies and institutional support are essential to prevent adverse health outcomes and improve student wellbeing.

## INTRODUCTION

Stress is an unavoidable division of human existence, often comes from emotional alterations triggered by many factors like financial pressures, career choices, social standing, educational attainment, workplace competition, familial conflicts, and challenges in mastering life's obstacles [1]. Stress can be capable to have a dual effect on individuals. Form one point of view it can be advantageous for students, by acting as a motivating factor that leads to self-improvement and improves performance. Though increased levels of stress can seriously influence both the mental health and physical health of the students, certainly directing to a range of adverse consequences like anxiety, depression, and physical ailments. Moreover, chronic stress can harm the reasonable function and disrupt the sleep patterns, further worsens the challenges that would be faced by students [2].

As per the World Health Organization “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. Inside the educational system, students face many forms of stress, enclosing both the academic pressures and non-academic challenges <sup>[3]</sup>. BDS students may experience stress from many multiple sources, which includes academic demands, environmental factors, limited time for relaxation and extracurricular activities, criticism, as well as pressures from the family and also from the social circles <sup>[4]</sup>. The pathway for becoming a dental or medical undergraduate is frequently described as challenging, demanding and requires significant patience and hard work <sup>[5]</sup>. Among all the healthcare professions, dentistry is particularly prominent for its high demands and also for its stress-inducing nature <sup>[6]</sup>.

The effect of academic year on the stress levels is notable, mainly with the third academic year of the 5-year curriculum which is being identified as the most stressful year <sup>[7]</sup>. This increase in high stress can lead to a reduction in the student performance. However, stress poses a considerable threat and can negatively impact either the physical or mental or both physical and mental well-being of students <sup>[8]</sup>.

Thirty-eight sources of stress in the dental education system have been divided into five groups: Living Accommodation, Personal Factors, Educational Environment, Academic Work, Clinical Factors.

Recognizing these sources of stress can help in growing some targeted arbitrations address the specific stressors being faced by the dental students <sup>[9]</sup>.

## **MATERIALS AND METHODS**

An observational cross-sectional study was conducted on 931 participants. The study participants are administered based on the structured questionnaire (PSS). The participants are interviewed by the principal investigator and the response was recorded. Participation is voluntary, and verbal consent was obtained. This study has obtained an ethical clearance from the instructional ethical committee. It is a questionnaire study to assess the stress in dental students using perceived stress scale

**PARTICIPANTS:** All BDS Students

**INCLUSION CRITERIA:** All BDS students from 1st BDS to internship.

**EXCLUSION CRITERIA:** Students who have systemic diseases before joining BDS Course. Stress in dental undergraduate students was measured using the PSS4.

#### PERCEIVED STRESS SCALE:

It is measure of personal stress can be determined by using a variety of instruments that have been designed to help measure individual stress levels. The Perceived Stress Scale (PSS) is a classic stress assessment instrument. The questions in this scale ask about feelings and thoughts during the last month. In each case, it will be asked to indicate how often felt or thought a certain way.

Total 25 questions are used

For each question choose from the following alternatives:

0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often

Figuring PSS Score:

Determine PSS score by following these directions:

First, reverse scores for questions 1, 2, 3, 9, 10, 14, 17, 19, 21 and 22. On these 4 questions, change the scores like this: 0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0.

Now add up scores for each item to get a total.

Individual scores on the PSS can range from 0 to 100 with higher scores indicating higher perceived

1. Scores ranging from 0-33 would be considered low stress.
2. Scores ranging from 34-66 would be considered moderate stress.
3. Scores ranging from 67-100 would be considered high perceived stress

Now with the response of questions: "22.is your personal health & your family member's health is fine?"

" Take out the percentages of health conditions of subjects in each group of stress levels.

Now compare this percentage with the stress levels.

This gives a relation between stress and systemic diseases among BDS students.

#### RESULTS AND OBSERVATIONS

The collected data is entered into Ms-Excel and data is subjected to statistical analysis using SPSS Version 21.0. Frequencies were calculated followed by chi-square test for the categorical data. Statistical significance value set as  $p < 0.05^{**}$ .

**Table1: Representing the distribution stress levels among the study participants**

Stress levels	Frequency	Percent%
Low	177	19.0
Moderate	731	78.5
High	23	2.5

**Table 2: Representing the association of Perceived Stress Scale variables and stress**

**levels among the study participants**

QUESTION	RESPONSES	Low	Moderate	High	Value
1. Are you interested in choosing dentistry?	Never	41.4%	57.6%	1.0%	P<0.001***
	Almost never	32.5%	67.0%	0.5%	
	Sometimes	12.0%	86.6%	1.3%	
	Fairly Often	9.6%	87.5%	2.9%	
	Very often	9.0%	82.1%	9.0%	
2. Do you feel confident about your abilities to handle difficult situation in department?	Never	40.0%	58.4%	1.6%	P<0.001***
	Almost never	29.1%	70.5%	0.4%	
	Sometimes	11.4%	85.3%	3.3%	
	Fairly Often	1.8%	92.9%	5.4%	
	Very often	8.6%	87.9%	3.4%	
3. How often have you been able to control irritations	Never	29.4%	68.1%	2.5%	
	Almost never	25.2%	74.4%	0.4%	

during clinical studies?	<b>Sometimes</b>	14.9%	83.7%	1.4%	P<0.001***
	<b>Fairly Often</b>	6.8%	87.5%	5.7%	
	<b>Very often</b>	21.7%	65.0%	13.3%	
4.Doyoureceivcriticism among students and teachers ?	<b>Never</b>	53.2%	46.8%	0.0%	P<0.001***
	<b>Almost never</b>	23.4%	76.6%	0.0%	
	<b>Sometimes</b>	8.5%	91.3%	0.3%	
	<b>Fairly Often</b>	1.7%	94.2%	4.1%	
	<b>Very often</b>	3.7%	80.7%	15.6%	
5.Do you feel stressed during examination?	<b>Never</b>	40.5%	59.5%	0.0%	P<0.001***
	<b>Almost never</b>	26.0%	74.0%	0.0%	
	<b>Sometimes</b>	27.5%	71.8%	0.6%	
	<b>Fairly Often</b>	18.2%	80.7%	1.1%	
	<b>Very often</b>	8.2%	86.2%	5.6%	
6.How often have you felt difficulties were piling up so high that you could not overcome them?	<b>Never</b>	51.6%	46.9%	1.6%	P<0.001***
	<b>Almost never</b>	27.9%	69.8%	2.3%	
	<b>Sometimes</b>	20.6%	78.8%	0.6%	
	<b>Fairly Often</b>	6.0%	91.6%	2.4%	
	<b>Very often</b>	2.2%	83.5%	14.3%	
7.Do you have financial responsibility?	<b>Never</b>	39.3%	57.9%	2.7%	P<0.001***
	<b>Almost never</b>	16.3%	82.3%	1.4%	
	<b>Sometimes</b>	13.5%	84.6%	1.9%	
	<b>Fairly Often</b>	14.7%	85.3%	0.0%	
	<b>Very often</b>	12.6%	81.7%	5.8%	

8.How often have you found that you could not cope with all the things that you had to do?	<b>Never</b>	51.7%	48.3%	0.0%	P<0.001***
	<b>Almost never</b>	33.7%	66.3%	0.0%	
	<b>Sometimes</b>	18.4%	80.2%	1.3%	
	<b>Fairly Often</b>	6.4%	92.3%	1.3%	
	<b>Very often</b>	5.7%	78.4%	15.9%	
9.Is your hostel or home accommodation being appropriate for studying?	<b>Never</b>	40.7%	58.9%	0.4%	P<0.001***
	<b>Almost never</b>	21.8%	77.0%	1.2%	
	<b>Sometimes</b>	6.8%	90.3%	2.9%	
	<b>Fairly Often</b>	1.3%	94.9%	3.8%	
	<b>Very often</b>	2.6%	86.8%	10.5%	
10.How often have you felt that things were going your way?	<b>Never</b>	30.6%	67.3%	2.0%	P<0.001***
	<b>Almost never</b>	38.3%	61.7%	0.0%	
	<b>Sometimes</b>	17.9%	81.3%	0.8%	
	<b>Fairly Often</b>	6.9%	90.3%	2.8%	
	<b>Very often</b>	3.4%	80.9%	15.7%	
11.Doyoufeelstressdueto learning clinical procedure?	<b>Never</b>	43.8%	55.2%	1.0%	P<0.001***
	<b>Almost never</b>	26.6%	72.7%	0.6%	
	<b>Sometimes</b>	17.4%	81.8%	0.8%	
	<b>Fairly Often</b>	4.8%	90.3%	4.8%	
	<b>Very often</b>	1.4%	83.1%	15.5%	
12.How often have you felt nervous and stressed during course of dentistry?	<b>Never</b>	40.0%	60.0%	0.0%	P<0.001***
	<b>Almost never</b>	39.2%	60.8%	0.0%	
	<b>Sometimes</b>	26.6%	73.2%	0.2%	
	<b>Fairly Often</b>	3.8%	95.3%	0.9%	
	<b>Very often</b>	0.7%	85.2%	14.1%	
	<b>Never</b>	38.9%	59.9%	1.1%	

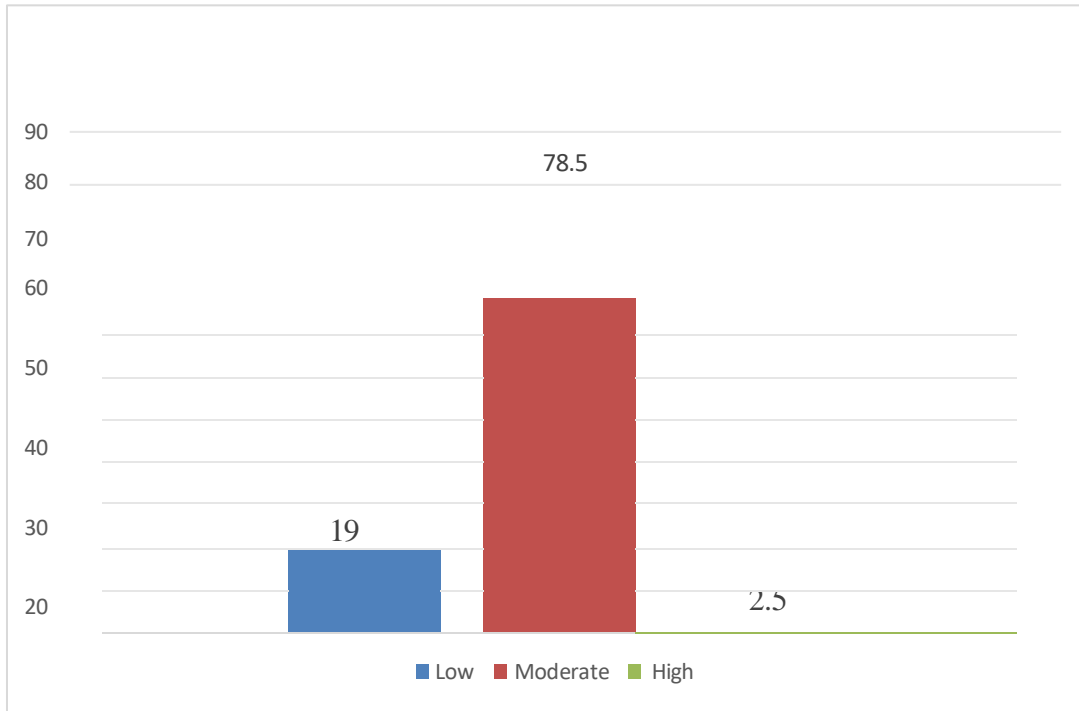
13.Do you feel home sick? If yes how often?	<b>Almost never</b>	19.4%	79.8%	0.8%	P<0.001***
	<b>Sometimes</b>	12.1%	86.8%	1.1%	
	<b>Fairly Often</b>	7.5%	89.2%	3.3%	
	<b>Very often</b>	5.0%	86.3%	8.6%	
14.Is your professor teaching language being comfortable?	<b>Never</b>	32.9%	66.6%	0.5%	P<0.001**
	<b>Almost never</b>	13.5%	84.7%	1.8%	
	<b>Sometimes</b>	5.3%	91.9%	2.9%	
	<b>Fairly Often</b>	3.2%	83.9%	12.9%	
15.How often have you been angered because of things that happened that were outside of your control?	<b>Never</b>	46.4%	53.6%	0.0%	P<0.001**
	<b>Almost never</b>	41.3%	58.7%	0.0%	
	<b>Sometimes</b>	18.7%	81.1%	0.2%	
	<b>Fairly Often</b>	9.9%	86.4%	3.7%	
	<b>Very often</b>	3.6%	82.7%	13.6%	
16.Doyouhaveanyhealth hazard at work?	<b>Never</b>	41.6%	58.0%	0.4%	P<0.001**
	<b>Almost never</b>	19.3%	79.7%	1.1%	
	<b>Sometimes</b>	6.7%	92.4%	1.0%	
	<b>Fairly Often</b>	2.2%	91.0%	6.7%	
	<b>Very often</b>	1.7%	80.0%	18.3%	
17.How often do you communicate with your	<b>Never</b>	31.1%	68.0%	0.8%	P<0.001**
	<b>Almost never</b>	11.2%	87.8%	1.0%	
	<b>Sometimes</b>	2.6%	92.3%	5.1%	

parents?	<b>Fairly Often</b>	0.0%	86.8%	13.2%	
	<b>Very often</b>	0.0%	89.5%	10.5%	
18.Do you have any difficulty in making friends?	<b>Never</b>	40.8%	58.1%	1.1%	P<0.001**
	<b>Almost never</b>	20.5%	78.9%	0.5%	
	<b>Sometimes</b>	8.0%	89.2%	2.8%	
	<b>Fairly Often</b>	4.6%	93.5%	1.9%	
	<b>Very often</b>	3.5%	86.0%	10.5%	
19.Doyouhavesufficient time for relaxation?	<b>Never</b>	42.9%	55.8%	1.3%	P<0.001**
	<b>Almost never</b>	33.2%	66.8%	0.0%	
	<b>Sometimes</b>	15.7%	83.1%	1.2%	
	<b>Fairly Often</b>	5.9%	91.1%	3.0%	
	<b>Very often</b>	5.8%	81.6%	12.6%	
20.How often have you been upset because of something that happened unexpectedly?	<b>Never</b>	26.7%	73.3%	0.0%	P<0.001**
	<b>Almost never</b>	47.5%	50.8%	1.6%	
	<b>Sometimes</b>	22.6%	77.2%	0.2%	
	<b>Fairly Often</b>	9.3%	88.7%	2.1%	
	<b>Very often</b>	6.1%	82.3%	11.6%	
21.Doyouhavesufficient time for patient management ?	<b>Never</b>	41.7%	58.3%	0.0%	P<0.001**
	<b>Almost never</b>	27.2%	71.8%	1.0%	
	<b>Sometimes</b>	11.3%	87.7%	1.0%	
	<b>Fairly Often</b>	3.1%	89.1%	7.8%	
	<b>Very often</b>	9.3%	70.4%	20.4%	

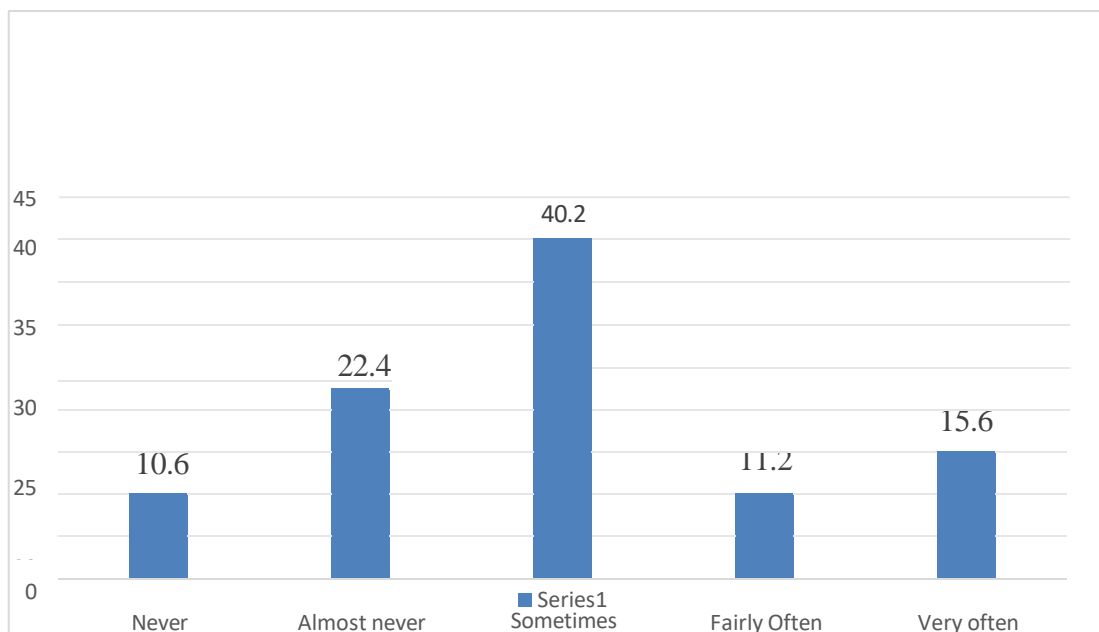
22.Is your personal health & family members health being fine?	<b>Never</b>	43.2%	56.4%	0.4%	P<0.001**
	<b>Almost never</b>	14.7%	84.2%	1.1%	
	<b>Sometimes</b>	6.0%	92.2%	1.8%	
	<b>Fairly Often</b>	4.7%	87.5%	7.8%	
	<b>Very often</b>	2.7%	73.0%	24.3%	
23.Do you face any stress due to patient attitude towards you or Dentistry?	<b>Never</b>	49.7%	48.4%	1.9%	P<0.001**
	<b>Almost never</b>	27.9%	71.4%	0.7%	
	<b>Sometimes</b>	11.1%	86.6%	2.3%	
	<b>Fairly Often</b>	3.5%	94.2%	2.3%	
	<b>Very often</b>	1.8%	87.3%	10.9%	
24.Do you have any habits like smoking, drinking or drug addiction?	<b>Never</b>	22.7%	74.7%	2.6%	P<0.001**
	<b>Almost never</b>	8.6%	91.4%	0.0%	
	<b>Sometimes</b>	3.5%	95.3%	1.2%	
	<b>Fairly Often</b>	0.0%	100.0%	0.0%	
	<b>Very often</b>	0.0%	83.3%	16.7%	
25.Do you face any discrimination between students?	<b>Never</b>	44.2%	55.8%	0.0%	P<0.001**
	<b>Almost never</b>	21.5%	78.5%	0.0%	
	<b>Sometimes</b>	5.3%	93.1%	1.6%	
	<b>Fairly Often</b>	1.1%	93.1%	5.7%	
	<b>Very often</b>	1.0%	85.9%	13.1%	

Chi-square test, statistical significance set as

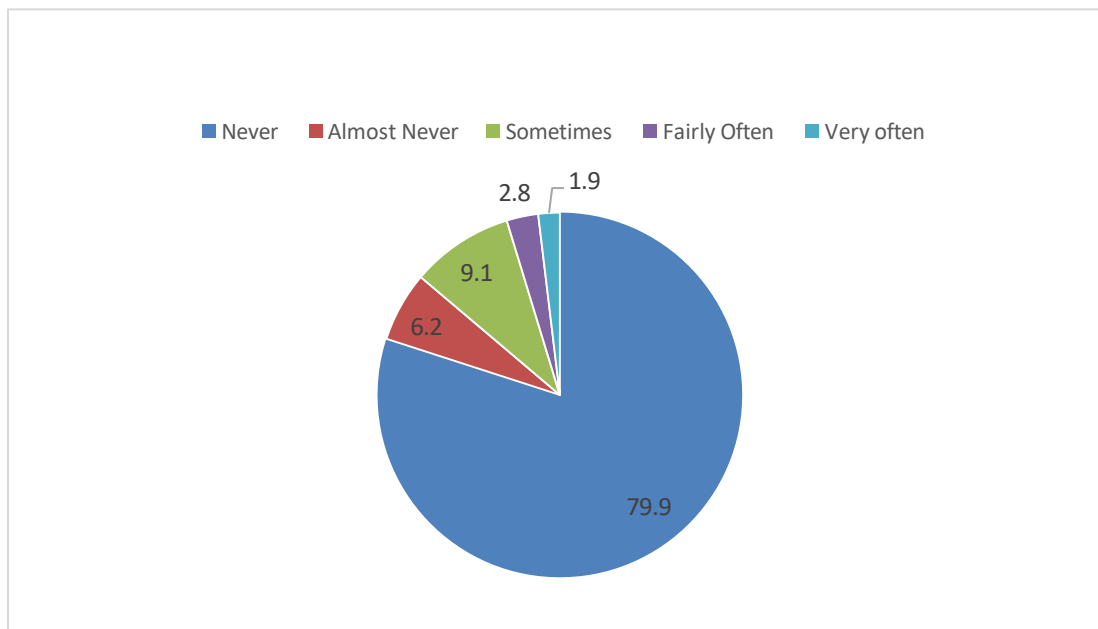
$p < 0.05^{**}$  Levels of stress among the Study groups:



This chart shows that majority of the study participants are at moderate level of stress **Interest towards dentistry among the Study group:**



**The Habit of Smoking, Drinking and Drug Addiction Among Study groups**



**DISCUSSION: -**

The study conducted aimed to evaluate perceived stress levels among dental students and explore the factors contributing to stress within this population. The following discussion provides an in-depth analysis of the results obtained from the survey data and offers insights into the implications for dental education and student support services, drawing upon existing literature on stress among healthcare professionals and dental students.

**Perceived Stress Levels:**

The study's findings reveal that a substantial proportion of dental student’s experience moderate levels of stress (78.5%), with a smaller percentage reporting low (19.0%) or high (2.5%) stress levels. These percentages offer valuable insights into the prevalence and distribution of stress among dental students, indicating that the majority experience moderate stress, while a notable minority experience low or high levels of stress. Such observations align with existing literature, which consistently highlights the prevalence of stress among dental students (Elanietal.,2014)<sup>[12]</sup>; (Pöhlmann et al., 2019)<sup>[17]</sup>. Examining these percentages within the context of academic progression may provide further insights into the trajectory of stress levels throughout the dental

education journey. This could help identify critical periods of heightened stress and inform the development of targeted interventions to support students during these transitions.

### **Factors Contributing to Stress: -**

The association between perceived stress levels and various factors underscores the multifaceted nature of stress experienced by dental students. Several key factors emerge as significant contributors to stress within the dental education context:

**Academic Pressure:** - Academic-related stressors, such as confidence in handling difficult situations, managing clinical studies, and coping with academic work load, significantly impact stress levels among dental students. The majority of students report sometimes (40.2%) or fairly often (11.2%) feeling stressed during examinations, reflecting the academic pressures inherent in dental education (Abu-Ghazalehet al,2018)<sup>[13]</sup> ;( Daivari's et al., 2013)<sup>[14]</sup>.

**Clinical Environment:** The clinical environment poses unique challenges for dental students, contributing to interpersonal stressors such as criticism from peers and faculty, stress during patient interactions, and difficulties in managing clinical responsibilities. Notably, a substantial proportion of students report sometimes (38.1%) or very often (11.7%) receiving criticism among students and teachers, highlighting the interpersonal stressors within the clinical setting (Peker et al.,2009)<sup>[16]</sup> ;( Sanders et al., 2018)<sup>[18]</sup> Effective coping strategies, communication skills training, and mentorship programs can help mitigate stressors within the clinical setting and foster a supportive learning environment. Additionally, faculty training in providing constructive feedback and creating a positive learning atmosphere is crucial for student success and well-being.

**Personal and Social Factors:** Personal and social factors, such as financial responsibilities, accommodation arrangements, and social support networks, also influence stress levels among dental students. Financial strain, inadequate housing, and feelings of homesickness can exacerbate stress and impact overall well-being. A significant proportion of students report sometimes (27.9%) or very often (20.5%) having financial responsibility, indicating a potential source of stress (Sugiura et al., 2019)<sup>[19]</sup>.

**Health Behaviors:** The study highlights the association between stress levels and health-related behaviors, including smoking, drinking, and drug addiction. While the majority of participants report never engaging in these behaviors (79.9%), a small percentage of

students who do report

higher stress levels. This underscores the importance of promoting healthy coping mechanisms and addressing substance use disorders as part of comprehensive student support services (Pöhlmann et al., 2019)<sup>[17]</sup> ;( Sanders et al., 2018)<sup>[18]</sup>.

### **Limitations and Implications:**

Several limitations of the study should be considered, including its cross-sectional design, reliance on self-reported data, and potential response bias. Future research employing longitudinal designs and objective measures of stress can provide further insights into the dynamics of stress among dental students.

Additionally, interventions aimed at promoting mental health literacy, stress management skills, and resilience-building should be integrated into dental education curricula to support student well-being. In conclusion, the study contributes to our understanding of the factors influencing stress levels among dental students and underscores the importance of addressing these factors to promote student well-being.

The percentages derived from the study's findings have several implications for dental education and student support services. By identifying the most prevalent stressors and their associated percentages, educators and administrators can prioritize interventions that target these specific areas.

Furthermore, by examining the percentages of students experiencing stress at different levels (low, moderate, high), educators can tailor support services to meet the diverse needs of students across the stress continuum. For instance, students experiencing high levels of stress may benefit from individual counseling services, while those experiencing moderate stress may find group-based stress management workshops helpful. By implementing targeted interventions and fostering a supportive learning environment, dental educators and administrators can mitigate stress and enhance the overall educational experience for students.<sup>(19,20)</sup>

**CONCLUSION: -**

This study concludes that there is a relation between the stress and personal health of the dental students. Majority of the dental student are with moderately stressed (78.5%) levels very less members are with highly stress (2.5) levels.

The interest towards dentistry among dental students is not that up to mark because the responses towards never (10.6%) and almost never (22.4%) in combination (33%) are higher that the responses towardfairlyoften (11.2%) and very often (15.6%) in combination (26. 8%). Other students are interested in dentistry only some time (40.2%).

There is some indirect factor that can influence the health of study participants which can be the resultants of the stress those are habits like smoking, drinking alcohol and drug addictions .19.1% of the study participants are addicted to these habits. This can damage the systemic health conditions of the students.

As the age in the study group is limited to approximately to the age group of 25 years, we might see less systemic diseases in them because of their healthy immune system and this can be termed as a limitation.

**QUESTIONNAIRE**

1. Are you Interested in choosing dentistry?
2. Do you feel confident about your abilities to handle difficult situation in department?
3. How often have you been able to control irritations during clinical studies?
4. Do you receive criticism among students and teachers?
5. Do you feel stressed during examination?
6. How often have you felt difficulties were piling up so high that you could not overcome them?
7. Do you have financial responsibility?
8. How often have you found that you could not cope with all the things that you had to do?
9. Is your hostel or home accommodation being appropriate for studying?

10. How often have you felt that things were going your way?
11. Do you feel stress due to learning clinical procedure?
12. How often have you felt nervous and stressed during course of dentistry?
13. Do you feel home sick? If yes, how often?
14. Is your professor teaching language being comfortable?
15. How often have you been angered because of things that happened that were outside of your control?
16. Do you have any health hazard at work?
17. How often do you communicate with your parents?
18. Do you have any difficulty in making friends?
19. Do you have sufficient time for relaxation?
20. How often have you been upset because of something that happened unexpectedly?
21. Do you have sufficient time for patient management?
22. Is your personal health & family member's health being fine?
23. Do you face any stress due to patient attitude towards you or Dentistry?
24. Do you have any habits like smoking, drinking or drug addiction?
25. Do you face any discrimination between students?

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