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PERCEIVED STRESS AND COPING STRATEGIES IN DENTAL STUDENTS DURING CLINICAL TRAINING: A CROSS-SECTIONAL STUDY

Original Research

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ABSTRACT

Background: Dental students undergoing clinical training face a unique set of academic and psychological challenges that can significantly affect their mental well-being and performance. Stress in this phase is often high, and the coping strategies employed play a crucial role in managing its impact.

Objective: To determine the levels of psychological stress and the coping mechanisms commonly adopted by dental students during their clinical training in dental colleges of Lahore.

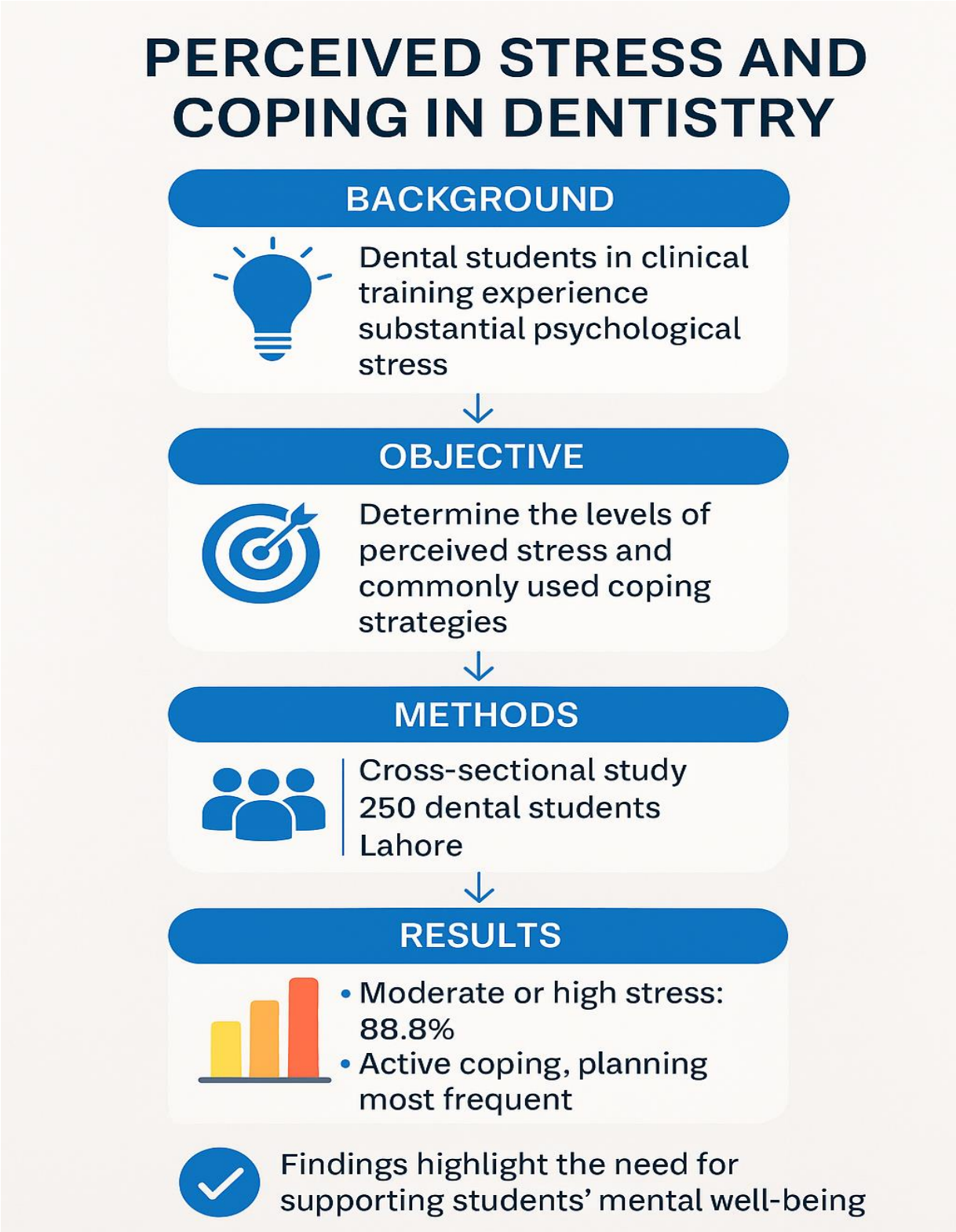
Methods: This cross-sectional study was conducted over eight months in various public and private dental institutions in Lahore. A total of 250 third- and fourth-year dental students participated. The Perceived Stress Scale (PSS-10) and Brief COPE inventory were used to assess stress levels and coping strategies, respectively. Descriptive statistics, Pearson correlation, and regression analyses were performed using SPSS version 26. Ethical approval was obtained and informed consent was secured.

Results: Moderate stress was reported by 56.8% of students, and high stress by 32.0%. Active coping (mean score 5.8 ± 1.2), planning (5.5 ± 1.1), and acceptance (5.2 ± 1.3) were the most commonly used coping strategies. Maladaptive strategies such as denial and substance use were less frequent but positively correlated with higher stress levels. Active coping and planning were significantly associated with lower perceived stress ($p < 0.01$), while avoidance and substance use showed significant positive correlations ($p < 0.05$).

Conclusion: A high prevalence of psychological stress exists among dental students during clinical training. While many adopt effective coping mechanisms, the use of maladaptive strategies in some cases underscores the need for institutional support systems to promote mental health and resilience.

Keywords: Adaptation, Psychological; Clinical Competence; Cross-Sectional Studies; Dental Students; Mental Health; Pakistan; Stress, Psychological; Students, Dental.

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INTRODUCTION

Dental education is widely recognized as a rigorous academic journey, often accompanied by a heavy psychological burden. Students progressing into the clinical phases of their training encounter a unique set of challenges that not only test their academic competence but also their emotional and mental resilience (1). These challenges stem from increased responsibilities, such as performing real-life procedures on patients, managing time effectively in busy clinical settings, and balancing academic expectations alongside practical skills. The transition from theoretical learning to hands-on clinical experience tends to amplify stress, potentially impacting students' performance and overall well-being. While stress in medical and dental education is not a novel concept, the specific pressures experienced during clinical training warrant more targeted exploration. Previous research has shown that dental students face higher levels of psychological distress compared to their peers in other disciplines (2,3). A combination of academic overload, competitive environments, fear of failure, and the demands of clinical performance contribute to elevated stress levels. Additionally, the fear of making clinical errors and the pressure to meet patient expectations can further intensify this stress. In fact, clinical training periods are often described as the most emotionally taxing phases of a dental student's academic path. Such chronic exposure to stress, if not managed appropriately, may lead to burnout, anxiety, and even depression, ultimately compromising not only the student's mental health but also the quality of care provided to patients (4,5).

Given the inevitability of stress in such demanding educational environments, it becomes critical to understand how students cope with these pressures. Coping strategies serve as adaptive tools that help individuals manage stressful situations and maintain emotional balance. In the context of dental education, the adoption of effective coping mechanisms can significantly influence students' academic success and psychological health (6). Coping strategies generally fall into two broad categories: problem-focused coping, which involves actively addressing the source of stress, and emotion-focused coping, which aims to manage the emotional responses to stress (7). It is well established that individuals who employ more problem-solving strategies tend to exhibit better psychological outcomes, whereas those who rely heavily on avoidance or emotional suppression may be more vulnerable to mental health challenges. Despite the existing literature on stress in healthcare education, there is a noticeable gap in studies that specifically focus on dental students during their clinical training period (8). Most existing research tends to generalize findings across all years of study or across broader medical student populations, thereby overlooking the unique stressors and coping responses that are characteristic of the clinical phase. Moreover, cultural and institutional variations also influence how stress is perceived and managed, suggesting the need for localized studies that can inform tailored interventions (9,10). Understanding the stress landscape and coping profiles of dental students during clinical practice is thus crucial for developing supportive educational frameworks and mental health resources.

By identifying prevalent stressors and the coping strategies employed by dental students in the clinical phase, institutions can implement more responsive and effective support systems. These may include stress management workshops, peer support groups, and mental health counseling services tailored specifically for students in clinical settings. Additionally, academic policies can be revised to promote a more balanced and empathetic learning environment (11,12). Cultivating resilience and adaptive coping in students not only enhances their academic experience but also prepares them to face the emotional demands of future professional practice with confidence and competence. This study, therefore, seeks to determine the levels of psychological stress experienced by dental students during their clinical training and to identify the coping mechanisms they most commonly adopt. By doing so, it aims to fill a critical gap in the literature and contribute to the growing body of knowledge on mental health in dental education. The objective is to provide evidence-based insights that can guide institutional strategies for promoting student well-being, ultimately supporting the development of emotionally resilient dental professionals.

METHODS

This cross-sectional study was conducted over a period of eight months across multiple medical and dental colleges in Lahore, Pakistan, aiming to assess the psychological stress levels and identify the commonly adopted coping mechanisms among dental students engaged in clinical training. The study was designed to provide a snapshot of mental health and coping behavior in this specific population, using validated instruments and rigorous statistical methods to ensure accuracy and reliability. The study population consisted of undergraduate dental students who were actively participating in clinical rotations during the data collection phase. Participants were recruited from both public and private institutions to ensure diverse representation. Inclusion criteria required students to be in their third or fourth academic year, as these years typically involve intensive clinical exposure. Students who had not yet begun clinical training, those currently on academic leave, or individuals with a previously diagnosed psychiatric disorder were excluded to avoid confounding

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variables that might affect stress perception or coping behavior. A minimum sample size of 246 was calculated using a 95% confidence level, 5% margin of error, and an anticipated population proportion of stress prevalence among dental students at 60%, based on previous literature. Accounting for a 10% non-response rate, a total of 270 students were invited to participate. Convenience sampling was used across institutions, ensuring ethical and practical feasibility (3,4).

Data collection was carried out through a structured, self-administered questionnaire distributed in both printed and digital formats, depending on institutional preferences and student accessibility. The questionnaire comprised three main sections: demographic information, assessment of psychological stress, and evaluation of coping strategies. Psychological stress was measured using the Perceived Stress Scale (PSS-10), a globally recognized and validated tool with ten items rated on a 5-point Likert scale, where higher scores indicate greater perceived stress. Coping strategies were evaluated using the Brief COPE Inventory, which consists of 28 items grouped into 14 coping strategies. These tools were chosen for their established reliability, cross-cultural validity, and relevance to the student population (13,14). To ensure the integrity of the data, students were informed about the anonymity and confidentiality of their responses, and participation was entirely voluntary. Written informed consent was obtained from all participants prior to data collection. Ethical approval was granted by the Institutional Review Board of the participating universities. All procedures conformed to the ethical standards outlined in the Declaration of Helsinki. Upon collection, the data were reviewed for completeness and consistency before being entered into SPSS version 26 for statistical analysis. Descriptive statistics were calculated for all demographic variables, including means and standard deviations for continuous variables and frequencies with percentages for categorical variables. The primary outcome, perceived stress level, was presented as a continuous variable using PSS scores and categorized into low, moderate, and high stress levels based on established thresholds. Coping strategies were analyzed by calculating mean scores for each subscale of the Brief COPE.

For inferential analysis, independent sample t-tests and one-way ANOVA were employed to examine differences in stress levels across demographic subgroups such as gender, academic year, and type of institution. Pearson's correlation coefficient was used to evaluate the relationship between perceived stress and specific coping strategies. Since the data were found to be normally distributed using the Shapiro-Wilk test, parametric tests were deemed appropriate. A p-value of less than 0.05 was considered statistically significant for all tests. To further understand the predictors of stress levels among the participants, multiple linear regression analysis was conducted, incorporating demographic variables and coping strategy scores as independent variables. This approach allowed for the identification of both risk and protective factors associated with psychological stress among dental students. In sum, the methodology of this study was designed to offer a comprehensive and reproducible framework for investigating stress and coping mechanisms in dental students during clinical training. Every effort was made to maintain methodological rigor, uphold ethical standards, and ensure that the data collected would provide meaningful insights for future academic, psychological, and institutional interventions aimed at supporting students in clinical education environments.

RESULTS

A total of 250 dental students participated in the study, with a mean age of 22.1 years. The sample included 98 males (39.2%) and 152 females (60.8%). Students from both third and fourth academic years were nearly evenly represented, and the distribution across public and private institutions was proportionally balanced. Analysis of psychological stress using the Perceived Stress Scale (PSS-10) revealed that the majority of students (56.8%) experienced moderate stress, while 32.0% reported high stress levels, and only 11.2% fell within the low-stress category. These findings reflect a substantial prevalence of psychological distress among clinical dental students. In terms of coping strategies, the most frequently adopted mechanisms were active coping (mean score 5.8 ± 1.2), planning (5.5 ± 1.1), and acceptance (5.2 ± 1.3), indicating a preference for problem-focused strategies. Emotional support (4.7 ± 1.2) and self-distraction (4.9 ± 1.4) were also moderately used. In contrast, maladaptive strategies such as denial (3.0 ± 1.5) and substance use (2.4 ± 1.1) were less commonly reported, though still present in the coping profiles.

Pearson correlation analysis highlighted significant relationships between coping mechanisms and stress levels. Notably, active coping ($r = -0.42$, $p = 0.002$) and planning ($r = -0.38$, $p = 0.005$) showed negative correlations with stress, suggesting their protective role. Conversely, avoidance ($r = 0.35$, $p = 0.012$) and substance use ($r = 0.44$, $p = 0.001$) were positively correlated with higher stress levels, reflecting maladaptive responses. The graphical representation of stress level distribution and coping strategy usage provided a visual summary of the results. The bar chart depicting stress levels clearly illustrated the predominance of moderate and high stress among

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students, while the coping strategy chart emphasized a marked preference for constructive coping approaches over avoidance-based methods.

Table 1: Demographic Characteristics of Participants

Variable	Value
Total participants	250
Mean age (years)	22.1
Gender	
Male	98 (39.2%)
Female	152 (60.8%)
Academic year	
3rd year	122
4th Year	128
Sector	
Public Institution	136
Private Institution	114

Table 2: Perceived Stress Scale (PSS-10) Results

Stress Level	Number of Students	Percentage (%)
Low (0–13)	28	11.2%
Moderate (14–26)	142	56.8%
High (27–40)	80	32.0%

Table 3: Coping Strategies Scores (Brief COPE)

Coping Strategy	Mean Score	Standard Deviation
Active coping	5.8	1.2
Planning	5.5	1.1
Acceptance	5.2	1.3
Self-distraction	4.9	1.4
Denial	3.0	1.5
Substance use	2.4	1.1
Emotional support	4.7	1.2
Avoidance	3.6	1.3

Table 4: Correlation Between Coping Strategies and PSS-10 Stress Scores

Coping Strategy	Correlation with PSS Score (r)	p-value
Active coping	-0.42	0.002
Planning	-0.38	0.005
Avoidance	0.35	0.012
Substance use	0.44	0.001

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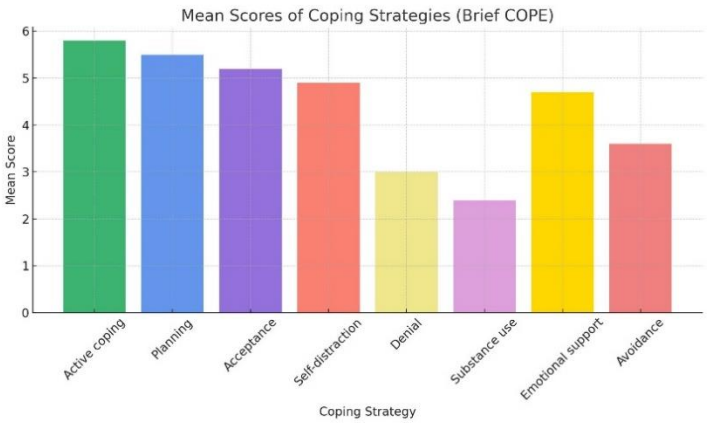


Figure 1 Mean Scores of Coping Strategies (Brief COPE)

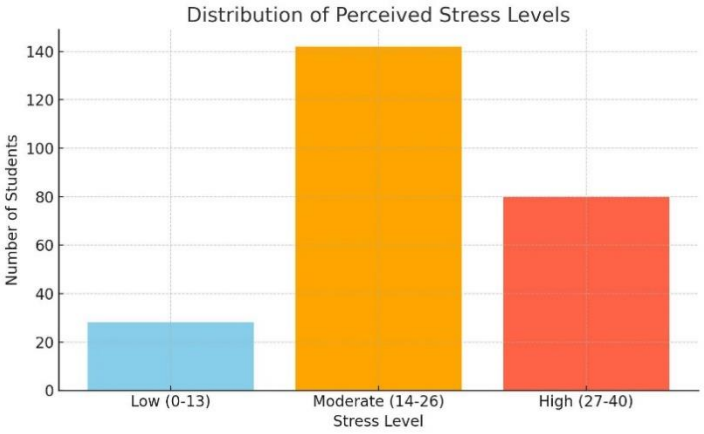


Figure 2 Distribution of Perceived Stress Levels

DISCUSSION

The findings of this study align with a growing body of literature indicating high levels of psychological stress among dental students during clinical training. A substantial proportion of participants in the present sample experienced moderate to high levels of perceived stress, consistent with observations from other recent studies conducted in diverse geographical and institutional contexts. For instance, a study reported that the majority of undergraduate dental students in Lahore perceived moderate stress levels, with "overload due to syllabus" emerging as a primary stressor (15). Similarly, a study emphasized the prominence of academic pressure, curriculum demands, and procedural requirements as dominant stressors for clinical students in Nigeria (16). The predominance of moderate stress observed in this study is indicative of a persistent strain on students navigating the clinical phase, which demands both technical proficiency and interpersonal sensitivity. This exposure to live patient care inherently elevates the stakes of academic performance, often leading to a psychologically taxing environment. Consistent with earlier literature, female students were overrepresented in higher stress categories, a trend also documented by a study that, women were more inclined to report elevated stress and employ emotional and religious coping strategies (17).

Coping mechanisms varied widely across the cohort, yet problem-focused strategies such as active coping and planning were the most frequently employed. This pattern is in line with findings from a study identified planning as the most commonly used method among Turkish dental students, particularly in private educational environments (18). The use of emotion-focused strategies such as religious practices was also prevalent, echoing reports documented high reliance on prayer and meditation among both public and private university students in Egypt (19). Importantly, the correlational analysis of this study further reinforced the protective nature of adaptive coping mechanisms. Active coping and planning were significantly associated with lower stress levels, while maladaptive behaviors such as avoidance and substance use correlated positively with higher stress. These findings mirror those of a study which identified similar associations between stress and the selection of coping mechanisms, particularly in students with lower emotional regulation capabilities (20).

The study contributes significantly to the existing literature by focusing specifically on clinical-year dental students in Lahore, a region where institutional and cultural pressures may differ from Western or East Asian educational contexts (21,22). The inclusion of validated measurement tools (PSS-10 and Brief COPE) and appropriate statistical techniques (e.g., Pearson correlation and regression modeling) strengthen the validity and generalizability of the findings. Nonetheless, limitations must be acknowledged. The use of convenience sampling may introduce selection bias, potentially overrepresenting students more inclined to participate in research due to heightened self-awareness of stress. Furthermore, the cross-sectional design restricts causal inference, and stress levels may fluctuate over academic cycles and examination periods. Future studies would benefit from longitudinal tracking to monitor stress trajectories throughout clinical training, as well as qualitative inquiry to deepen the understanding of subjective student experiences. Moreover, interventional research evaluating the effectiveness of institutional stress management programs and curriculum reforms would be particularly valuable. Such efforts could directly inform policy shifts aimed at fostering healthier academic environments. In conclusion, this study underscores the

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pressing need for structured psychological support within dental institutions, particularly during clinical years. By documenting both the magnitude of stress and the diversity of coping strategies, it lays a foundation for targeted interventions that can enhance student well-being, academic performance, and future professional resilience.

CONCLUSION

This study highlighted the substantial levels of psychological stress experienced by dental students during clinical training, with a predominance of moderate to high stress. Students largely relied on adaptive coping strategies, although maladaptive behaviors were also present. The findings emphasize the urgent need for institutional support systems and targeted stress management interventions to foster student well-being and enhance academic and clinical performance in dental education settings.

AUTHOR CONTRIBUTION

Author	Contribution
Rukh-e-Zainab Virk*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Aleshba Saba Khan	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Syeda Hadia Qudrat	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Alisha Summan	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Adam Khan	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Momina Nadeem	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published

REFERENCES

1. Collin V, O'Selmo E, Whitehead P. Stress, psychological distress, burnout and perfectionism in UK dental students. Br Dent J. 2020;229(9):605-14.
2. Metz CJ, Ballard E, Metz MJ. The stress of success: An online module to help first-year dental students cope with the Impostor Phenomenon. J Dent Educ. 2020;84(9):1016-24.
3. Asokan S, Pollachi Ramakrishnan G, Ranganatham KV, Viswanath S, Sivasamy S. Stress amongst paediatric dental postgraduate students in India: A mixed-method approach. Eur J Dent Educ. 2022;26(3):629-38.
4. Alotaibi S, Deligianni E, Riley P, Glenny AM. Prevalence and Incidence of Stress Among UK Dental Students: A Systematic Review and Meta-analysis. Int Dent J. 2025;75(3):2314-22.
5. Bali H, Rai V, Khanduri N, Tripathi R, Adhikari K, Sapkota B. Perceived Stress and Stressors among Medical and Dental Students of Bhairhawa, Nepal: A Descriptive Cross-sectional Study. JNMA J Nepal Med Assoc. 2020;58(226):383-9.
6. Atif S, Mustafa N, Ghafoor S. Perceived stress and coping strategies used by undergraduate dental students: An observational study. PLOS ONE. 2025;20.
7. Veeraboina N, Doshi D, Kulkarni S, Patanapu S, Danatala SN, Srilatha A. Perceived stress and coping strategies among undergraduate dental students – an institutional based study. International Journal of Adolescent Medicine and Health. 2020;34.
8. Khanal S, Shrestha S. Perceived Stress among Undergraduate Students in a Dental College: A Descriptive Cross-sectional Study. JNMA: Journal of the Nepal Medical Association. 2021;59:892-6.
9. Ghazal G, Abdelaziz W, Amer H. PERCEIVED SOURCES OF STRESS AND COPING STRATEGIES AMONG UNDERGRADUATE DENTAL STUDENTS IN PUBLIC UNIVERSITY AND PRIVATE UNIVERSITY (Cross sectional study). 2021.

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10. Abiodun-Solanke I, Ajayi D, Sigbeku O, Ashiwaju M. Perceived Sources of Stress and Coping Strategies among Clinical Dental Students in Two Nigerian Universities. Nigerian Dental Journal. 2020.
11. Mocny-Pachońska K, Trzcionka A, Doniec RJ, Sieciński S, Tanasiewicz M. The Influence of Gender and Year of Study on Stress Levels and Coping Strategies among Polish Dental. Medicina (Kaunas). 2020;56(10).
12. Silva AND, Vettore MV. Factors associated with dental students' mental health during the COVID-19 pandemic: a longitudinal study. Braz Oral Res. 2024;38:e090.
13. Aleksejuniene J, Hysi D, Nikolovovska J, Stangvaltaite-Mouhat L, Chałas R, Oancea R, et al. European student wellness, stress, coping, support and perceptions about remote dental training during COVID-19. Eur J Dent Educ. 2022;26(4):820-9.
14. Basheer B, Alassaf M, Alameer A, Alghamdi A, Alzaaqi N, Alfaran F, et al. Emotional intelligence and stress coping mechanisms among dental students in Riyadh, Saudi Arabia. Medical Science. 2022.
15. Ehsan F, Iqbal S, Younis MA, Khalid M. An educational intervention to enhance self-care practices among 1st year dental students- a mixed method study design. BMC Med Educ. 2024;24(1):1304.
16. Duarte C, Zakaria H, Mahdi E, Othman S, Ali N. Correlation of stress and work load in dental students during clinical academic years. Hamdan Medical Journal. 2020;13:39-45.
17. Hussein V. Comparative Study of Emotional Intelligence and Perceived Stress Among Dental Postgraduate Students. Cureus. 2025.
18. Baqai S, Thaver IH, Effendi FN. Burnout among Medical and Dental Students: Prevalence, Determinants, and Coping Mechanisms. J Coll Physicians Surg Pak. 2024;34(12):1508-12.
19. Osses-Anguita Á E, Sánchez-Sánchez T, Soto-Goñi XA, García-González M, Alén Fariñas F, Cid-Verdejo R, et al. Awake and Sleep Bruxism Prevalence and Their Associated Psychological Factors in First-Year University Students: A Pre-Mid-Post COVID-19 Pandemic Comparison. Int J Environ Res Public Health. 2023;20(3).
20. Fernandez MDS, Casarin M, Ortiz FR, Muniz F. Association between dental environment stress and sense of coherence in dental students: a cross-sectional study. Braz Oral Res. 2023;37:e111.
21. Veerabhadrappa SK, Yadav S. Adapting the New Normal Teaching Strategies as a Coping Mechanism for Dental Students. J Coll Physicians Surg Pak. 2021;31(5):608-9.
22. Lin GSS, Tan WW, Chua KH, Kim JE, Gan J, Halil MHM. Adapting new norms: A mixed-method study exploring mental well-being challenges in dental technology education. PLoS One. 2025;20(3):e0320602.

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