
The Relationship Between Levels of Depression, Anxiety, And Stress With Bruxism in The College Students of The Faculty of Dentistry Andalas University

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ABSTRACT

Depression, anxiety and stress are major risk factors for various physical and mental health problems. College students are more prone to depression, anxiety, and stress than the general population. These three things often occur simultaneously and can exacerbate each other, causing various complaints and affecting the body's physiology, one of which can cause bruxism. Purpose: This study aims to determine the relationship between levels of depression, anxiety, and stress with bruxism in students of the Faculty of Dentistry, Andalas University. The type of research used was analytic observational with a cross sectional study approach. The statistical analysis used was the Chi- square test. The research sample was selected 94 people using proportionate stratified random sampling technique. Measurement of depression, anxiety, and stress levels was carried out using the Depression, Anxiety, and Stress Scale 21 questionnaire, while bruxism assessment used a modified questionnaire by Daniel E. Paesani (Bruxism, Theory, and Practice) and Winocur E (Self-reported bruxism-association with perceived stress, motivation for control, dental anxiety and gagging) by Rahmi (2017). This study showed that the prevalence of depression, anxiety, and stress with different levels of severity among respondents were depression (57.4%), anxiety (68.1%), and stress (70.2%). A total of 53 people (56.4%) of respondents have bruxism habits. The results of the Chi-square statistical test obtained a value of $p < 0.05$ which means that there is a relationship between the level of depression, anxiety, and stress with bruxism habits in the college students of the Faculty of Dentistry, Andalas University. There is a relationship between levels of depression, anxiety, and stress with bruxism habits in the college students of the Faculty of Dentistry, Andalas University.

Keyword: Depression, anxiety, stress, bruxism, college students.

INTRODUCTION

Stress is a common pressure faced by students in their daily academic lives. According to Agustini (2019), this pressure can stem from two sources: internal demands, which originate from personal desires and capabilities, and external demands, such as academic tasks, parental expectations, and the increasing complexity of academic material. Furthermore, a student's field of study can significantly contribute to stress, especially in demanding fields like dentistry, which requires mastery of both theoretical knowledge and clinical skills (Astoeti et al., 2021).

studies have shown that dental students are at a higher risk of experiencing stress, anxiety, and depression. Salviana (2022) found that 50% of students at the Faculty of Dentistry, Andalas University (FKG Unand) experienced mild stress, 39.3% experienced moderate stress, and 4.8% experienced severe stress. The main contributors to stress are academic pressure, intrapersonal conflicts, and environmental factors (Musabiq and Karimah, 2018).

Stress and anxiety are also linked to psychosocial problems, as noted by Puranik et al. (2016), who emphasized the psychological impact of stress, including emotional disturbances like depression and anxiety. These conditions can affect the body's physiology, manifesting in issues such as bruxism, a parafunctional habit where individuals unconsciously clench or grind their teeth (Cavallo et al., 2016).

Research on bruxism among dental students has shown a relatively high prevalence. Leneena et al. (2020) reported that 27.9% of dental students at AIMST University suffered from bruxism, with 75% of them also experiencing psychosocial problems such as stress and anxiety. Similarly, Salviana (2022) found that 59.5% of dental students at Andalas University were affected by bruxism.

Given the strong correlation between stress, anxiety, depression, and bruxism, this study aims to further explore the relationship between levels of depression, anxiety, and stress and the occurrence of bruxism among students at the Faculty of Dentistry, Andalas University.

RESEARCH METHODS

This study is an observational analytic research aimed at determining the relationship between levels of depression, anxiety, and stress with bruxism habits among students of the Faculty of Dentistry at Andalas University. The research uses a cross-sectional design, where observations of both independent variables (depression, anxiety, stress) and the dependent variable (bruxism) are conducted at one point in time. The study was carried out in March 2024 at the Faculty of Dentistry, Andalas University, with a total population of 568 preclinical and clinical students.

The sample was taken using proportionate stratified random sampling, with a minimum of 85 participants, which was increased to 94 to account for potential dropouts. The sample was proportionally distributed across different student cohorts. Inclusion criteria included active students willing to participate, while exclusion criteria involved certain medical conditions and the use of specific drugs, alcohol, or large amounts of caffeine.

Data was collected through questionnaires comprising three sections: respondent biodata, the DASS-21 questionnaire to measure depression, anxiety, and stress, and a questionnaire to assess bruxism habits. Data analysis included univariate analysis to examine variable distributions, and bivariate analysis using the Chi-square test to evaluate the relationship between depression, anxiety, and stress levels with bruxism habits.

RESULTS AND DISCUSSION

Research Results

The study involved 94 respondents, primarily female (70.2%), with most participants aged between 21-23 years (42.5%). The sample consisted of both preclinical (59 students) and clinical (35 students) cohorts from the Faculty of Dentistry, Andalas University.

Depression, Anxiety, and Stress Levels

- **Depression:** 57.4% of respondents experienced depression, with a higher prevalence among preclinical students (36.2%) compared to clinical students (21.2%).
- **Anxiety:** Anxiety affected 68.1% of respondents, and it was most prevalent in the 18-20 age group (29.7%). Anxiety was more common among preclinical students (44.3%) than clinical students (23.3%).
- **Stress:** A majority of students (70.2%) experienced stress, with higher rates in preclinical students (45.7%) compared to clinical students (24.5%).

Bruxism Habits

- **Bruxism:** 56.4% of respondents reported bruxism habits, with higher rates in the 18-20 age group (24.5%).

Bivariate Analysis

- **Depression and Bruxism:** There was a significant relationship between depression levels and bruxism habits ($p = 0.025$). Students with mild to moderate depression were more likely to experience bruxism.
- **Anxiety and Bruxism:** Anxiety also showed a strong correlation with bruxism ($p = 0.002$). Higher anxiety levels, particularly severe anxiety, were linked to an increased likelihood of bruxism.
- **Stress and Bruxism:** A significant relationship was observed between stress levels and bruxism ($p = 0.039$). Students with higher stress levels were more prone to bruxism.

Overall, the study demonstrates significant associations between depression, anxiety, and stress with bruxism among dental students.

Discussion

Depression Levels of Preclinical and Clinical Students of the Faculty of Dentistry, Andalas University

The depression levels among preclinical and clinical dental students at Andalas University were measured using the DASS-21 questionnaire. The results showed that the majority of respondents experienced depression (57.4%), with mild depression being the most prevalent (34%). These findings are consistent with a study by Basudan et al. (2017), which found that the majority of dental students at King Saud University, Saudi Arabia, experienced depression (55.9%), with moderate depression being the most common (21.4%). The high levels of depression were linked to the pressures students face during dental education, such as workload, clinical requirements, exams, and grades (Basudan et al., 2017). Another study by George et al. (2022) on dental students at Manipal University showed similar results, with 60.4% of students experiencing depression, mostly at a moderate level (24.2%), caused by the increasing academic workload. Both supporting studies utilized the DASS-21 questionnaire as a measuring tool, and the variation in depression levels could be attributed to various internal and external factors, as well as the coping mechanisms of each respondent.

In terms of age groups, this study found that depression was more common among students aged 18-20 compared to other age groups. This finding aligns with a study by Ghaedi et al. (2014) on students at Esfahan University, where 41% of students aged 18-20 experienced depression (Ghaedi et al., 2014). Depression is higher in the 18-20 age group than in those above 20 years old because this age represents a transition period from high school to university, involving environmental changes, increased responsibilities, and adjustments to independent living and different learning methods, as well as greater academic demands. In contrast, students over 20 years of age are generally more emotionally and psychologically mature, enabling them to employ more effective coping strategies (Barbayannis et al., 2022).

Anxiety Levels of Preclinical and Clinical Students of the Faculty of Dentistry, Andalas University

The anxiety levels of preclinical and clinical dental students at Andalas University were also measured using the DASS-21 questionnaire. The results indicated that the majority of respondents experienced anxiety (68.1%), with severe anxiety being the most common (20.2%). This finding is consistent with a study by Yaputri (2023), which showed that many dental students at the University of Indonesia experienced anxiety (55.8%), with 44.2% experiencing mild anxiety and 11.6% experiencing severe anxiety (Yaputri, 2023). The measuring tool used in Yaputri's study was the Generalized Anxiety Disorder-7 (GAD-7) questionnaire. Another study by George et al. (2022) found that most dental students at Manipal University experienced moderate anxiety (29.1%) using the DASS-21 questionnaire.

The differences in anxiety levels may be attributed to the different tools used, as the GAD-7 is designed for a quick evaluation of general anxiety, while the DASS-21 provides a broader and more comprehensive assessment of individual mental health.

A study by Ahad et al. (2021) showed similar results, with a high prevalence of anxiety (66.86%) among final-year dental students in India. The high prevalence of anxiety among dental students can be attributed to concerns about failure and the competitive academic environment. According to Wayt (in Basudan et al., 2017), personal issues such as interpersonal conflicts and time management challenges have a greater effect on student anxiety than academic factors.

Stress Levels of Preclinical and Clinical Students of the Faculty of Dentistry, Andalas University

The stress levels of preclinical and clinical dental students at Andalas University were measured using the DASS-21 questionnaire. The results showed that the majority of respondents experienced stress (70.2%). Yaputri's study also found that 88.4% of dental students at the University of Indonesia experienced moderate stress (74.4%) and severe stress (14%) (Yaputri, 2023). Another study by Salviana (2022) reported that 50% of dental students at Andalas University experienced mild stress out of 84 respondents.

Differences in stress levels may be due to variations in curricula, workload, exams, grading systems, academic policies, and economic conditions. Latti et al. (2020) also reported that dental students have relatively high levels of stress. This can be attributed to the fact that during the preclinical stage, the learning environment undergoes many changes, and students are still in the process of adapting (Abdulghani et al., 2011). One factor that may influence stress reactions is previous experience; individuals who have experienced stressful situations before are generally better able to cope with recurring stressful situations (Priyoto, 2014).

In terms of age groups, stress was more common among students aged 21-23 (28.7%) in this study. This finding contrasts with a study by Aslan and Pekince (2021), which showed that students aged 18-20 had higher stress levels than those over 20. Stress is more common in the 21-23 age group because this period represents a transition from adolescence to young adulthood, accompanied by major changes in responsibility, independence, and social expectations, increasing the risk factors for stress (Scott et al., 2013).

Bruxism Habits of Preclinical and Clinical Students of the Faculty of Dentistry, Andalas University

In this study, bruxism was diagnosed as probable bruxism using a self-reported bruxism questionnaire and attrition facet examination. The results showed that 53 students (56.4%) experienced bruxism.

By age group, the study found that bruxism was more common in students aged 18-20. This is supported by a study by Melo et al. (2019), which reported that the prevalence of bruxism decreases with age due to changes in jaw muscle activity that influence the tendency to grind teeth (Melo et al., 2019).

According to the questionnaire results, 43.6% of respondents had awake bruxism, 40.4% had sleep bruxism, and 27.7% had both awake and sleep bruxism (combined bruxism). In awake bruxism, the most common activity was clenching, which is often a stress or concentration response and can lead to headaches. In sleep bruxism, the most common activity was grinding, which often occurs unconsciously during sleep.

Clinical examination of attrition facets is a common method for diagnosing bruxism. A study by Asmawati et al. (2014) found a relationship between bruxism and higher attrition levels, with 78.3% of subjects diagnosed with bruxism showing morphological changes in the occlusal and incisal surfaces of teeth (Asmawati et al., 2014).

The Relationship Between Depression Levels and Bruxism Habits

The study found that 53 students (56.4%) had bruxism. Of these, 31 students had mild-to-moderate depression, 5 students had severe-to-very-severe depression, and 17 students had no depression. A chi-square test yielded a p-value of 0.025 ($p < 0.05$), indicating a significant relationship between depression levels and bruxism habits.

This is consistent with Yagci et al. (2020), who found a relationship between depression and bruxism (Yagci et al., 2020). Similarly, Karacay et al. (2021) found a significant relationship between depression, anxiety, and bruxism in healthcare workers (Karacay et al., 2021).

The Relationship Between Anxiety Levels and Bruxism Habits

The study showed that 53 students (56.4%) had bruxism. Of these, 15 had mild-to-moderate anxiety, 28 had severe-to-very-severe anxiety, and 10 had no anxiety. A chi-square test yielded a p-value of 0.002 ($p < 0.05$), indicating a significant relationship between anxiety levels and bruxism habits.

This aligns with Keskinruzgar et al. (2018), who found a significant relationship between anxiety and bruxism using the State-Trait Anxiety Inventory (STAI) (Keskinruzgar et al., 2018).

The Relationship Between Stress Levels and Bruxism Habits

The study found that 53 students (56.4%) had bruxism. Of these, 22 had mild-to-moderate stress, 22 had severe-to-very-severe stress, and 9 had no stress. A chi-square test yielded a p-value of 0.039 ($p < 0.05$), indicating a significant relationship between stress levels and bruxism habits.

This is supported by Martínez-Hernández et al. (2022), who reported a strong relationship between stress and bruxism (Martínez-Hernández et al., 2022). Similarly, Salviana (2022) found a significant relationship between stress and bruxism among dental students at Andalas University (Salviana, 2022).

CONCLUSIONS

Based on the research conducted on preclinical and clinical students at the Faculty of Dentistry, Andalas University, the following conclusions can be drawn:

Relationship Between Depression, Anxiety, Stress, and Bruxism

The results showed a significant relationship between depression, anxiety, and stress levels with bruxism habits. Depression, anxiety, and stress were found to significantly influence the prevalence of bruxism among the students. This supports the hypothesis that psychological factors can contribute to the development of bruxism.

Depression Levels

The majority of the students experienced mild depression. Out of all the respondents, 57.4% showed signs of depression, with the mild depression category being the most prevalent (34%). This indicates that although depression is present among students, most of them experience it at a milder level.

Anxiety Levels

The majority of the students experienced severe anxiety. A total of 68.1% of the respondents showed symptoms of anxiety, with severe anxiety being the most common category (20.2%). This suggests that anxiety is a more serious issue among dental students, with a significant portion experiencing higher levels of anxiety.

Stress Levels

The majority of the students experienced severe stress. A total of 70.2% of the respondents were categorized as experiencing stress, with severe stress being the most prevalent category. This shows that stress is a dominant factor among preclinical and clinical students, with many facing significant challenges in managing it.

Prevalence of Bruxism

The prevalence of bruxism among the students was 56.4%. Bruxism was identified through self-reported questionnaires and clinical examination for attrition facets, indicating that more than half of the respondents exhibited bruxism habits.

These conclusions highlight the significant psychological burden that preclinical and clinical students at the Faculty of Dentistry, Andalas University, experience, and how this is related to the occurrence of bruxism among them.

REFERENCES

- Abdulghani, H. M. et al. (2011). Stress and its effects on medical students: A cross-sectional study at a college of medicine in Saudi Arabia. *J Health, Population and Nutrition*, 29(5), 516–522.
- Agustiniingsih, N. (2019). Gambaran Stres Akademik dan Strategi Koping Pada Mahasiswa Keperawatan. *Jurnal Ners dan Kebidanan (Journal of Ners and Midwifery)*, 6(2), 241–250.
- Ahad, A., Chahar, P., Haque, E., Bey, A., Jain, M., & Raja, W. (2021). Factors affecting the prevalence of stress, anxiety, and depression in undergraduate Indian dental students. *J Educ Health Promot*, 10(1), 266.

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- Alzahem, A. M., Van Der Molen, H. T., Alaujan, A. H., Schmidt, H. G., & Zamakhshary, M. H. (2011). Stress amongst dental students: A systematic review. *Eur J Dent Educ*, 15(1), 8–18.
- Amalia, R., Arifin, R., & Dwinta Sari, G. (2023). The Relationship Between Anxiety and Bruxism In Adults (Literature Review). *Jur. Ked. Gigi*, (1).
- Aslan, H., & Pekince, H. (2021). Nursing students' views on the COVID-19 pandemic and their perceived stress levels. *Perspectives in Psychiatric Care*, 57(2), 695–701.
- Astoeti, T. E., Josephine, H., Widyarman, A. S., & Sudhana, W. (2021). Correlation between dental environment and perceived stress scale among dental students during the COVID-19 pandemic in Indonesia. *Kesmas*, 16(3), 165–170.
- Braz-José, C., Morais Caldas, I., de Azevedo, Á., & Pereira, M. L. (2023). Stress, anxiety and depression in dental students: Impact of severe acute respiratory syndrome-coronavirus 2 pandemic. *Eur J Dent Educ: Official Journal of the Association for Dental Education in Europe*, 27(3), 700–706.
- Cavallo, P., Carpinelli, L., & Savarese, G. (2016). Perceived stress and bruxism in university students. *BMC Research Notes*, 9(1), 1–6.
- Chemelo, V. dos S., Né, Y. G. de S., Frazão, D. R., Souza-Rodrigues, R. D. de, Fagundes, N. C. F., Magno, M. B., Silva, C. M. T. da, Maia, L. C., & Lima, R. R. (2020). Is There Association Between Stress and Bruxism? A Systematic Review and Meta-Analysis. *Frontiers in Neurology*, 11.
- Eisenberg, D., Gollust, S. E., Golberstein, E., & Hefner, J. L. (2007). Prevalence and correlates of depression, anxiety, and suicidality among university students. *The American Journal of Orthopsychiatry (AJO)*, 77(4), 534–542.
- Lavigne, G. J., Khoury, S., Abe, S., Yamaguchi, T., & Raphael, K. (2008). Bruxism physiology and pathology: An overview for clinicians. *J Oral Rehab*, 35(7), 476–494.
- Pöhlmann, K., Jonas, I., Ruf, S., & Harzer, W. (2005). Stress, burnout and health in the clinical period of dental education. *Eur J Dent Educ*, 8, 78–84.
- Raja, H. Z., Raja, S., Balasubramanian, G., & Jamuna Rani, R. (2020). Perceived Stress Levels in Pakistani Dental Students During COVID-19 Lockdown. *Eur J Dent Oral Health*, 1(4), 1–7.