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Determining The Relationship Between Depression And Bruxism Among Students Of Sarhad University Of Information And Technology, Peshawar

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Article Details

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ABSTRACT

Background: Depression and bruxism are prevalent conditions among university students, often influenced by academic stress and psychological pressure. While depression affects emotional and cognitive functioning, bruxism manifests as a stress-related parafunctional oral habit. The potential relationship between these two conditions remains underexplored in the local academic context.

Objective(s): To investigate the link between depression and bruxism among students at Sarhad university of information and technology.

Methodology: A Cross-sectional study was conducted among Students of Sarhad University of information and technology where 385 students of bachelor level were selected by non-probability convenience sample. Among the population studied were patients who were aged 18 to 30 years and both boys and girls. The collection of data was from university students using a self-assessment questionnaire that rated the level of bruxism. The student's presence of bruxism and without bruxism was recorded. Patient health questionnaire-9 was administered among students with and without depression. Alongwith descriptive statistics, Chi-square analysis was also conducted to find the connection between bruxism and depression.

Results: Chi-square test $p<0.05$ as significant for sleep bruxism and awake Bruxism including Grinding, Clenching, Result indicate that there is strong association between bruxism (sleep & awake) and depression. Pearson correlation value for sleep bruxism is 115.785, for grinding is 48.217, for clenching 72.148, for teeth contact is 103.076 and for mandible bracing is 49.778. A positive association between bruxism and depression, as bruxism increase depression increase and vice versa.

Conclusion: The study demonstrates a meaningful relationship between depression and bruxism among university students, highlighting the need for integrated mental and oral health screening programs in academic institutions.

INTRODUCTION:

Mental health and oral health are increasingly recognized as interrelated domains of overall well-being. Among psychological disorders, depression is one of the most prevalent and debilitating conditions worldwide 0. Simultaneously, bruxism, a parafunctional activity involving grinding or clenching of teeth, has gained attention due to its multifactorial etiology and strong association with psychological stress. In academic environments, particularly among university students facing academic pressure, these conditions may coexist and potentially influence one another 0. Understanding the relationship between depression and bruxism is therefore of clinical and academic importance.

Depression: Types, Causes, and Classification

Depression is a common mental disorder characterized by persistent sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), depression falls under the broader category of Depressive Disorders, which include several types 0. The most common form is Major Depressive Disorder (MDD), characterized by at least two weeks of depressed mood or loss of interest accompanied by additional cognitive and physical symptoms. Other forms include Persistent Depressive Disorder (Dysthymia), which involves chronic low-grade depression lasting at least two years; Seasonal Affective Disorder (SAD), linked to seasonal changes; and Bipolar Depression, which occurs as part of bipolar disorder0.

Depression can also be classified based on severity into mild, moderate, and severe forms. Mild depression may allow individuals to continue daily activities with difficulty, whereas severe depression significantly impairs functioning and may include psychotic features 0. Screening tools such as the Patient Health Questionnaire-9 (PHQ-9) are commonly used in research and clinical settings to assess the severity of depressive symptoms. The causes of depression are multifactorial, involving biological, psychological, and social factors. Biologically, imbalances in neurotransmitters such as serotonin, dopamine, and norepinephrine play a significant role. Genetic predisposition also increases vulnerability 0. Psychologically, negative thinking patterns, low self-esteem, and maladaptive coping mechanisms contribute to its development. Social factors such as academic pressure, financial stress, interpersonal conflicts, and lack of social support are particularly relevant among university students. Academic settings often create environments of performance anxiety and competition, which may exacerbate emotional distress and increase the risk of depressive symptoms 0.

Bruxism: Types, Causes, and Classification

Bruxism is defined as a repetitive jaw-muscle activity characterized by clenching or grinding of teeth and/or by bracing or thrusting of the mandible. It is considered a parafunctional habit, meaning it is not related to normal functional activities such as chewing or speaking. The American Academy of Sleep Medicine classifies bruxism into two primary types: Awake Bruxism and Sleep Bruxism 0.

Awake bruxism occurs during wakefulness and is often associated with stress, anxiety, and concentration. It typically involves jaw clenching rather than grinding and may be semi-voluntary. Sleep bruxism, on the other hand, occurs during sleep and is considered a sleep-related movement disorder. It is often accompanied by rhythmic masticatory muscle activity and may lead to tooth wear, jaw pain, headaches, and temporomandibular joint (TMJ) disorders. Bruxism can also be classified based on etiology into primary (idiopathic) and secondary bruxism. Primary bruxism has no identifiable medical cause, while secondary bruxism may result from neurological disorders, medications (such as antidepressants), substance use (e.g., caffeine, nicotine), or other medical conditions 0. The etiology of bruxism is multifactorial. Psychological factors, particularly stress, anxiety, and emotional tension, are widely recognized as major contributors. Neurochemical imbalances, especially involving dopamine pathways, have also been implicated. Occlusal discrepancies were previously considered primary causes, but contemporary research emphasizes the greater

role of central nervous system factors and psychosocial stressors. Among students, examination stress, workload, and social pressures can significantly increase the prevalence of bruxism 0.

Depression and Bruxism among students

University students represent a high-risk group for both depression and bruxism due to academic stress, competitive environments, and transitional life stages. Numerous studies suggest a significant association between psychological distress and parafunctional oral habits. Depression may increase muscle tension and alter neurochemical pathways, potentially contributing to the development or exacerbation of bruxism. Conversely, chronic bruxism can lead to pain, sleep disturbances, and reduced quality of life, which may further worsen depressive symptoms. In academic settings, prolonged study hours, sleep deprivation, fear of failure, and social isolation can heighten emotional vulnerability 0. Students in professional degree programs, including dental and medical disciplines, often experience elevated levels of stress due to demanding curricula and clinical responsibilities. Such stress may manifest physically through habits like teeth grinding and clenching. Moreover, sleep disturbances commonly associated with depression may aggravate sleep bruxism, creating a bidirectional relationship between the two conditions. Understanding the relationship between depression and bruxism among university students is particularly important in dental research 0. Early identification of psychological factors contributing to bruxism can facilitate timely intervention and holistic patient management. Therefore, exploring this association among students of Sarhad University of Information and Technology, Peshawar, can provide valuable insights into the psychological determinants of oral parafunctional habits and contribute to preventive strategies in both mental and dental health domains 0.

Problem Statement:

Depression is a growing public health concern among university students, particularly in developing countries where academic pressure, limited mental health resources, and socio-cultural factors may contribute to psychological distress. University students frequently experience high levels of stress due to examinations, academic workload, career uncertainty, and social expectations. These stressors increase their vulnerability to depressive symptoms, which can negatively affect cognitive performance, emotional stability, and overall well-being. At the same time, bruxism characterized by clenching or grinding of teeth is increasingly recognized as a stress-related parafunctional habit. Although bruxism has multifactorial causes, psychological factors such as anxiety, emotional tension, and depression are considered significant contributing elements. In academic environments, students may unconsciously develop bruxism as a physiological response to chronic stress and psychological strain. If left undetected, bruxism can lead to tooth wear, temporomandibular joint disorders, muscle pain, headaches, and long-term oral health complications. Despite the potential link between depression and bruxism, limited research has been conducted to explore this relationship among university students in Pakistan, particularly within the context of Sarhad University of Information and Technology, Peshawar. The absence of locally generated data makes it difficult to understand the magnitude of the problem and to design effective screening, prevention, and intervention strategies. Therefore, there is a need to determine whether a significant relationship exists between depressive symptoms and bruxism among university students, and to assess how psychological distress may influence oral parafunctional behaviors in this academic population.

While the rationale of this study is grounded in the growing recognition that mental health and oral health are closely interconnected. Bruxism is a kind of neglected health problem since almost all the population (a considerable amount) can have this condition during sleeping, so it is not that much widely recognized and treated. Enamel bruxism is the term that describes not only the damage that is made to the teeth, but also lowers the feeling of hunger in those people who have it and that disturbs the sleep of others who share the same room with them. The level of the disease might have some relationship with depression and also can be more serious and harmful if no one would help. Youths deal with the pressure of time and thus, often

neglect the small health problems. The subject under scrutiny is not properly discussed in the literature. The proposed research that will tackle the gap in knowledge about the possible relationship between anxiety and bruxism among university students. It aims at supplying invaluable inputs that can support better practice of medicine by increasing the precision of diagnosis and introducing preventative measures.

Objective(s):

To investigate the link between depression and bruxism among students at Sarhad university of information and technology, Peshawar.

LITERATURE REVIEW

Sleep bruxism is a shared problem that is found in 14% of the population. Three types of factors are involved in the development of bruxism, which are biologic, psychologic, and external. There have been a lot of scientific studies confirmed that bruxism, anxiety, and psychotic emotional problems may all co-exist. The objective of that research will be to find out whether or not sleep bruxism is connected with the feelings of chronic stress and depression. Objects and procedures as follow: In the course of the research 77 people were enrolled at the Clinic of Prosthetic Dentistry which is a part of the Department of Prosthetic Dentistry of Wroclaw Medical University in Poland. American Academy of Sleep Medicine's guidelines were referred to in order that it was possible to determine their chances of sleep bruxism. The second step involved the video-polysomnography studies of the patients. As the first step of the stress evaluation, the PSS-10 (Felt Stress Scale) was applied. The assessment of how frequently depressive symptoms occurred was done by using the Beck's Depression Inventory (BDI) The effect of Bruxism Episodes Index (BEI) on the Perceived Stress Scale-10 and Beck's Depression Inventory was statistically not significant ($p = 0.64$ and $p = 0.65$, respectively). There, too, the significant difference was found in the investigation group which consisted of people who bit their teeth, and the control group which consisted of people who did not bite their teeth ($p = 0.88$ and $p = 0.77$ respectively). The outcomes indicated no meaningful correlation between the severity of sleep bruxism and the sum 0.

The word "bruxism" refers to the habit of people grinding their teeth constantly or teeth clenching and the present research deals with the connection between psychological features and the condition. There were 470 individuals who served as participants and lived in the town. They underwent a holistic oral examination that had been administered by a dentist and also had them to fill out dental personality and history questionnaires. Neuroticism was shown to be related to the personality traits that were exhibited by people who reported that they usually grind their teeth. Such studies, which displayed such a direct association with anxiety and grief, are evidence that bruxism could be a result of that. Next, they were linked with several oral issues that usually go hand in hand with anxiety, such as having problems with chewing food, having clicks when they open and close their mouths, and feeling dry mouth. Consequently, customary oral health problems, such as gum disease, bleeding gums, and canker sore are classified as exceptions, as is the inducing of occlusal wear or tongue indentations by a dentist. In accordance with this research, neuroticism has been proven to be linked to bruxism and many other oral health problems associated with stress 0. The study focused on the link between anxiety, depression, and bruxism in 99 individuals among whom 99 had been diagnosed with temporomandibular disorders (TMD). The patients were divided into two groups: 58 patients with bruxism and 41 individuals who did not have bruxism. The accuracy of the patient's mental health depended on the Beck Depression Inventory (BDI), the Hospital Anxiety and Depression Scales (HADS), and the Hamilton Anxiety Rating Scale (HAMA). The mean HADS and HAMA scores (HADS and HAMA) were significantly different in individuals with bruxism and people without bruxism. This can however be realized by applying statistical analysis. From this we can assume that there might be a connection with the elevation of depression and anxiety with regard to those with TMD 0.

Study conducted by Smardz et al., (2019) intended to examine whether or not the presence of the awake

bruxism was associated with the mentioned symptoms, such as extensive pain thresholds, pain vigilance, oral health related quality of life, psychological health and anxiety. The research samples were made of patients who had initiated orthodontic treatment ongoing for almost six months. The following variables were measured three times: during the baseline, one month, and six months: the pressure pain threshold (PPT) in the right and left masseter, anterior temporalis, and TMJ, as well as the right forearm; the pain vigilance and awareness questionnaire; and the short form of the oral health impact profile (OHIP-14). The two different instruments, Beck anxiety inventory and Beck depression inventory, were used for the purpose of examining the symptoms of anxiety and depression separately. If there was (n=56) or there was not (n=58) the presence of possible awake bruxism, the patients were divided into 2 main groups during the medical check-up. It was found that ANOVA with a significance level p=0.050 worked well with this data set. None of the groups either reported any TMJ symptom or perceived muscular pain. As stated in the study results, the PPT in the masseter muscles and pain vigilance were neither dependent on time nor gender nor age nor awake grinding (p>0.050). The predominant impact of awake bruxism, on the other hand, was noticeable when levels of anxiety (ANOVA: A high dental anxiety scores (ANOVA: F=8.61, p=0.004) and depression (ANOVA: F=6.48, p=0.012) were higher as well as their OHRQOL (ANOVA: F=8.61, p=0.004) was worse. The patient who self-reported experience of awake 0.

According to Soto-Goñi et al., (2020) bruxism is the uncontrolled and repeated physical activity of the masticatory muscles (chewing) that might be manifested in gnashing, grinding, clenching of teeth and pressing of the jaw. As a type of exogenous causation, the background of genesis can be divided into the following categories: external (related with the organ's shape) or internal (related with the organ's physio pathology and physiology). Increasingly, a link has been established between acute depression and bruxism among pathological causes. The approach to the treatment of bruxism is still in the process of establishing; however, the application of botulinum Toxin A (BT A) is a technologically advanced and effective method of treatment in those patients who were diagnosed with bruxism. In total, 25 members were involved in this study, with twenty-three females and two males. Each patient came for an injection of 25 units BT-A respectively; the injection was given separately to the left and right masseter muscle. Consequently, the Beck's Depression Inventory was used as a monitoring tool through an assessment of whether there were change in patients' depressive symptoms six months after the SRG application. They made a comparison between the levels of depression and after their injection. To show the effect of therapy on the respondents' values, a paired t-test was employed. The main tool of the research is one-way ANOVA and post-hoc Tukey testing, which allows determining the impact of age groups on scores on the Beck Depression Inventory. A mean overall score of 7.80 ± 8.10 was found before the therapy, and it was shown to be 7.16 ± 6.52 six months after the treatment. Statistically speaking, the fallout in the mean score did not exhibit the exceptional level of significance (P >.05) 0.

Operational Definition(S)

Depression: Chronic state of loneliness and attention deficit to hobbies which individuals usually enjoyed with others 0. For as long as the symptoms lasts for two weeks or more, it is considered clinically depression disorder.

Bruxism: It is the phenomenon that is represented as clenching of jaw muscles and teeth's occlusal surfaces grinding **Error! Reference source not found.**. This condition is classified as sleep bruxism if a person is doing it while he is not sleeping and sleep bruxism if it occurs when the person is asleep.

Temporomandibular disorder: Temporomandibular disorder is an umbrella term for the problems or abnormalities in the proper functioning of the temporomandibular joint that can cause difficulty in the day-to-day tasks or night sleep disruption and affect sleep health or oral healthiness finally **Error! Reference source not found.**.

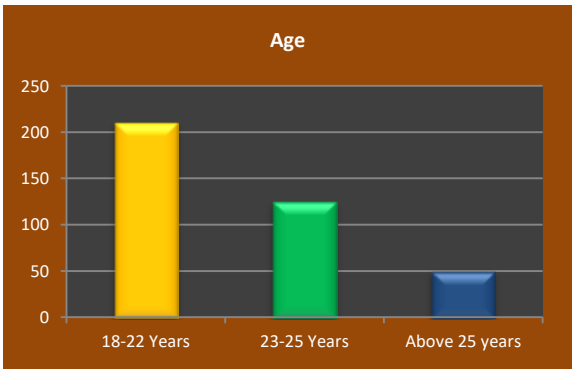
Methodology:

This cross-sectional study was conducted at Sarhad University of Information and Technology, Ring Road, Peshawar, between January 4th and March 22nd, 2025, to determine the relationship between depression and bruxism among university students. A total of 385 full-time undergraduate students aged 17 to 30 years, both male and female, were included in the study. The sample size was calculated using the World Health Organization (WHO) sample size calculator, and participants were selected through a convenience sampling technique. Students with a history of trauma, bacterial infection of the temporomandibular joint, ongoing orthodontic treatment, or musculoskeletal disorders were excluded from the study. Data were collected using a structured, self-administered questionnaire. Bruxism was assessed using a standardized open-access self-evaluation tool, and depression was measured using the Patient Health Questionnaire-9 (PHQ-9), a validated screening instrument developed by the American Psychological Association. Written informed consent was obtained from all participants prior to data collection. To ensure diversity and minimize disruption to academic activities, questionnaires were distributed at different times and locations within the university, including cafeterias, canteens, and common rooms. Completed questionnaires were reviewed for completeness and accuracy before data entry. The collected data were entered into Microsoft Excel, screened for errors, and analyzed using descriptive statistics, including frequencies and percentages. The Chi-square test was applied to determine the association between depression and bruxism, with statistical significance assessed accordingly.

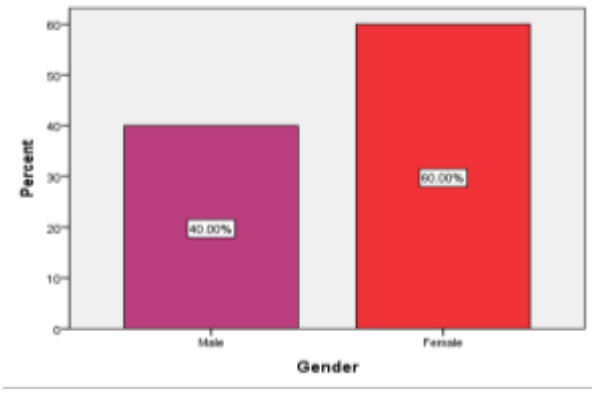
ANALYSIS & RESULTS

Demographic characteristics of Bruxism and Depression according to Age

Data was collected from 385 students from Sarhad University of information and technology with



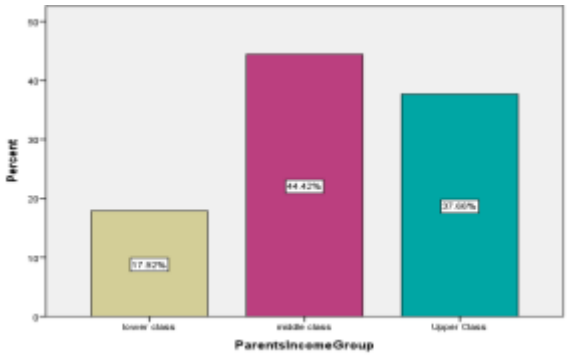
three (03) age groups i.e. 18-22years, 23-25 years and above 25 years. The descriptive statistics indicate that the majority of participants were aged 18–22 years, accounting for 54.5% (n = 210) of the total sample, suggesting that younger undergraduate students formed the largest proportion of respondents. This was followed by students aged 23–25 years, representing 32.5% (n = 125), while those above 25 years comprised a smaller segment at 13.0% (n = 50).



Demographic characteristics of Bruxism and Depression according to Gender

A total number of 385 responses were recorded which were categorized on the bases of gender. This account for 40% (154) male and 60% (231) females. 20% more females participated in this study. Females are more prone to depression as compared to males due to changes in hormones.

Demographic characteristics of Bruxism and Depression according to Parents Income

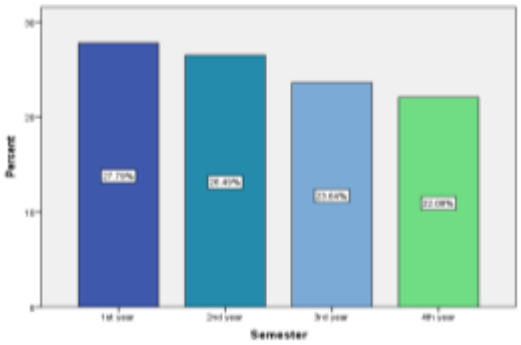


Group

Student considered themselves lower class account to 17.9% (69) of the sample population middleclass 44.4% (171) and upper class 37.7% (145). Considering be boundaries of upper and lower class they are not well defined. They earn and have a good life style as compared to lower class basic necessities are in rarely available to them. Depression is found to be more in the upper and lower class due to the wealth distribution.

Distribution according to Education Year

In current study all participant were undergraduate



students. 109(27.79%) respondents were 1st year students, 102(26.49%) were 2nd year students, 91(23.46%) were 3rd year students while 85(22.06%) were 4th year students.

Table 1 Descriptive Statistics of Bruxism

Statement	Responses	Frequency (f)	(%)
How often do you clench while sleeping	None of the time less than one/month 1-3 nights/month 1-3 night/week Don't know	7 97 155 52 74	1.8 24.9 39.8 13.4 19.0

Did you use to clench or grind our teeth when asleep in the past	No	114	29.3
	Yes	92	23.7
	Don't Know	179	46.0
How often do you grind our teeth together during waking hours	A little of the time	148	38.0
	Some of the time	84	21.6
	Most of the time	32	8.2
	All of the time	37	9.5
	Don't Know	84	21.6
Did you used to grind our teeth together during waking hours	No	79	20.3
	Yes	168	43.2
	Don't Know	138	35.5
How often do you clench our teeth together during waking hours	None of the time	33	8.5
	A little of the time	176	45.2
	some of the time	90	23.1
	All of the time	42	10.8
	Don't Know	44	11.3
Did you use to clench our teeth together during waking hours	No	142	36.5
	Yes	212	54.5
	Don't Know	31	7.7
How often do you press our teeth together other than eating	Most of the time	137	35.2
	All of the time	223	57.3
	Don't know	24	6.2
Did you used to press or hold our teeth together other than eating	No	34	8.7
	Yes	136	35.0
	Don't know	215	55.3
How often do you hold or tense our muscles without clenching	A little of the time	165	42.4
	Some of the time	140	36.0
	Don't know	80	20.6
Did you use to hold tense our muscles without clenching teeth together	No	110	28.3
	Yes	207	53.2
	Don't know	68	17.5

Table 1 presents descriptive stats about bruxism, which registers the frequency of teeth clenching and grinding during sleep and wake periods, and the muscle tension behaviors related. In terms of participants, the prevalence of clenching while asleep fluctuated with 39.8% of the respondents experiencing 1-3 nights per month being the highest. The uncertain clenching/grinding during sleep behaviors were experienced more evenly with the 46.0% of participants showing indistinctness. Among the study population, 38.0%% of teeth grinding reportedly took place 'a little of the time,' while 21.6%% stated 'some of the time.' A notable chunk (21.6%%) however reported being unsure of their grinding frequency during waking hours. Disagreement was also observed regarding the aspect of grinding during waking. In the days they are conscious their teeth clenching is variable for 45.2% slept with 'a little of the time' and 10.8% with 'all the time'. On the contrary, muscle tension behaviors, like holding or tightening muscles without teeth clenching, they report with varying frequencies for 42.4 % slept with 'a little of the time' and 36.0% The following abstracts would assist in identifying the occurrence of bruxism behavior in the past and the potential differences and similarities among the respondents.

Table 2 Descriptive Statistics of Depression

Statement	Several days	More than half the days	Nearly everyday
Little interest or pleasure in doing things	236 (60.7%)	47 (12.0%)	102 (26.2%)
Feeling down depressed or hopeless	214 (55.0%)	82 (21.1%)	89 (22.9%)
Trouble falling or staying asleep or sleeping too much	214 (55.0%)	84 (21.6%)	87 (22.4%)
Feeling tired or having little energy	143 (36.8%)	0 (0.0%)	242 (62.2%)
Poor appetite or overeating	78 (20.1%)	134 (34.4%)	170 (43.7%)
Feeling bad about yourself or that you are a failure	75 (19.3%)	110 (28.3%)	200 (51.4%)
Trouble concentrating on things such as reading the newspaper	241 (62.0%)	115 (29.6%)	29 (7.5%)

Table 2 exhibits the descriptive result concerning depression including the symptoms and the frequency that participants are experiencing them. The analysis is based on a broad range of depressive symptoms, including loss of interest or pleasure in activities, negative feelings, sleep difficulties, tiredness, change in appetite, negative self-estimation and difficulty with concentration. Having little interest or pleasure in doing things, the majority of respondents reported experiencing this 'several days' (236 individuals, 60.7%), followed by 'nearly every day' (102 individuals, 26.2%), and 'more than half the days' (47 individuals, 12.1%). Likewise, participants reporting being blue or out of spirit were , by 214 respondents (55.0%), , by 82 respondents (21.1%), and , by 89 respondents (22.9%). Insomnia was also a significant issue as 214 people (about half of the respondents) claimed that they had trouble falling or remaining asleep 'several days', while 84 individuals (about one-fifth of the participants) reported this problem as 'more than half of the days' and 87 people (about one-fifth of the participants) claimed having it 'almost every day'. Feelings of fatigue or having little energy were reported 'nearly every day' by the majority of respondents (242 individuals, 62.2%). The dietary intake pattern varied, 20.1% responded 'developing poor appetite several days' on the questionnaire, 34.4% chose 'developing poor appetite nearly every day', and 43.7% responded that they didn't experience any appetite change. Just like that, there were also 75 (19.3%) individuals reporting 'several days' of self-worth failure, 110 (28.3%) individuals reported 'more than half the days,' and 200 (51.4%) individuals reported never having such feeling. Difficulty with concentration were prevalent, with 241 respondents (62.0%) reporting trouble concentrating 'several days', 115 respondents (29.6%) reporting it 'more than half the days', and only 29 respondents (7.5%) reporting not experiencing this symptom at all. On the contrary, this suggests the complex and multi-dimensional nature of depressive symptoms experienced by many people which can only be addressed with thorough evaluation and concomitant treatment.

Table 3: Chi-Square Test

Association		**Pearson Correlation**	**P-value**
Sleep Bruxism	Sleep Bruxism and Depression	115.784	.001
Awake Bruxism	Grinding and Depression	48.217	.002

	Clenching and Depression	72.148	.003
	Teeth contact and Depression	103.076	.002
	Mandible Bracing and pain intensity	49.778	.004

Table 3 shows Chi-square test the $p<0.05$ significant for sleep bruxism and awake Bruxism including Grinding, Clenching, Teeth contact and mandible bracing. Result indicates that there is strong association between bruxism (sleep & awake) and depression. Pearson correlation value for sleep bruxism is 115.785, for grinding is 48.217, for clenching 72.148, for teeth contact is 103.076 and for mandible bracing is 49.778. The table shows the strong positive association between bruxism and depression, as bruxism increase depression increase and vice versa.

DISCUSSION

Results of this paper indicated bruxism-related behaviors at a mostly low-to-moderate frequency, but with high uncertainty, especially for sleep bruxism. The most common pattern for sleep clenching was 1–3 nights per month (39.8%), while a large share of students were uncertain about sleep clenching/grinding (46.0%), suggesting limited awareness of nocturnal behaviors. During waking hours, teeth grinding was reported "a little of the time" by 38.0%, and "some of the time" by 21.6%, while 21.6% remained unsure again indicating mixed awareness. Awake clenching appeared more frequent, with "a little of the time" reported by 45.2% and "all the time" by 10.8%. Muscle tension behaviors (tightening/holding jaw muscles without clenching) were also common, reported "a little of the time" by 42.4% and at higher frequency by a substantial proportion, implying that stress-related masticatory muscle activity may be present even when students do not clearly recognize grinding. These results are similar to some previous authors' researches i.e. Przystańska et al. (2019) reported that university students exhibited higher levels of stress and bruxism compared to the general population, highlighting student life as a risk context for parafunctional habits. They observed gender-related differences in stress, and emphasized that psychological strain is meaningfully linked to bruxism patterns0. Compared with our findings, this supports why awake clenching and muscle tension appear common in our sample both are frequently described as stress-expression behaviors. our high "unsure" responses for sleep behaviors may also align with the broader point that self-awareness of bruxism especially at night—can be limited. Likewise, Rajan et al. (2017) found an overall bruxism prevalence of 31.6% among undergraduate students and reported significant associations with stress and pain symptoms (e.g., muscle pain and TMJ-related complaints). In comparison, our results show many students report bruxism behaviors at "a little" or "some of the time," which is consistent with a substantial but not extreme level of bruxism activity in student populations 0. Muscle tension findings also fit the idea that bruxism-related activity often coexists with masticatory muscle discomfort even when students do not label it as "bruxism." Similarly, Smardz et al. (2019) analyzed sleep bruxism, stress and depressive symptoms in university students and its association with stress and depressive symptoms, reporting meaningful links between psychological distress and bruxism-related outcomes 0. This is highly relevant to our work because our results show frequent jaw behaviors (clenching/muscle tension) that plausibly reflect stress/depressive burden, while the large uncertainty about sleep behaviors suggests that self-report may underestimate true nocturnal bruxism. our pattern strengthens the rationale for pairing bruxism screening with depression measures (e.g., PHQ-9) to interpret oral behaviors in a psychosocial context.

The findings of the present study indicate a substantial burden of depressive symptoms among university students. A majority of participants reported experiencing key symptoms such as loss of interest, sleep disturbance, fatigue, and concentration difficulties for several days or more. Notably, 60.7% reported diminished interest in activities "several days," while 26.2% experienced this symptom "nearly every day."

Sleep disturbances and fatigue were particularly prominent, with over half reporting insomnia for several days and 62.2% experiencing low energy nearly every day. Concentration difficulties were also widespread (62.0% several days; 29.6% more than half the days). These findings suggest a moderate-to-high prevalence of depressive symptomatology within the academic environment, highlighting emotional, cognitive, and somatic dimensions of depression. In this context Soto-Goñi et al. (2020) conducted a systematic review and reported that depression prevalence among university students globally ranged from 10% to 85%, with many studies identifying high levels of subclinical depressive symptoms. They noted that academic stress, transitional life phases, and social pressures contribute significantly to emotional distress 0. Compared with our findings, the high frequency of symptoms such as fatigue, low mood, and concentration difficulties aligns closely with their conclusion that university students are particularly vulnerable to persistent psychological strain. our results reinforce their observation that depressive symptoms are not limited to clinical diagnosis but frequently manifest as recurring emotional and cognitive disturbances within student populations. Ball et al., (2022) in their study found that nearly 27% of students exhibited clinically relevant depressive symptoms, with significant associations between depression and concentration difficulties, negative self-perception, and academic performance impairment 0. Their study emphasized that difficulty concentrating was one of the strongest predictors of academic disruption. our findings strongly correspond with this pattern, as 62.0% of participants reported concentration difficulties for several days and 29.6% for more than half the days. Additionally, although over half of our respondents denied persistent self-worth failure, a considerable proportion reported experiencing such feelings intermittently, indicating fluctuating self-esteem issues. This comparison suggests that while not all students exhibit severe cognitive distortions, a substantial number experience periodic emotional and concentration challenges that may impact academic functioning.

CONCLUSION

The findings of this study indicate a considerable presence of both depressive symptoms and bruxism-related behaviors among students of Sarhad University of Information and Technology, Peshawar. A significant proportion of participants reported experiencing symptoms such as loss of interest, sleep disturbances, fatigue, and concentration difficulties, reflecting moderate levels of psychological distress within the academic environment. Similarly, bruxism behaviors, particularly awake clenching and muscle tension, were frequently observed, with many students reporting low-to-moderate frequency of such habits. The results argued a meaningful association between psychological stress and parafunctional oral behaviors, highlighting the interrelationship between mental health and oral health. These findings underscore the importance of early identification and interdisciplinary management approaches that address both psychological well-being and dental health. Implementing mental health awareness programs and routine screening for stress-related oral habits in university settings may contribute to improved overall health outcomes among students.

Recommendations

(1)
urther research should be conducted to determine the effect of intervention on bruxism.
(2)
he study should be conducted in multi-centered clinical settings.
(3)
uration of the study should be more than 6 months to maintain the follow-up for patients
(4)
xperts would like to use explicitly bruxism metrics so

Limitations

(1)
his was only a pilot study and the target population is a small group of university students.
(2)
here was a limited amount of funds.
(3)
he demographics of this study were limiting factor.
(4)
ata sampling was done on convenience sampling.
(5)
he time duration of this study was only 6 months.

they would maybe be able to discover bruxism; our(6)
dental checkup report did not particularly look forata collection should be done in multiple universities evidence of bruxism.

REFERENCES

Câmara-Souza MB, Carvalho AG, Figueredo OMC, Bracci A, Manfredini D, Rodrigues Garcia RCM. Awake bruxism frequency and psychosocial factors in college preparatory students. Cranio : the journal of craniomandibular practice. 2023;41(2):178-84.

Chattrattrai T, Blanken TF, Lobbezoo F, Su N, Aarab G, Van Someren EJW. A network analysis of self-reported sleep bruxism in the Netherlands sleep registry: its associations with insomnia and several demographic, psychological, and life-style factors. Sleep medicine. 2022;93:63-70.

Costa FDS, Fernandez MDS, Silva-Junior IFD, Karam SA, Chisini LA, Goettems ML. Association Involving Possible Sleep Bruxism, Stress, and Depressive Symptoms in Brazilian University Students: A Cross-sectional Study. Sleep science (Sao Paulo, Brazil). 2023;16(3):e317-e22.

Ekman A, Tiisanoja A, Näpänkangas R, Sipilä K. Association of health-related factors with self-reported sleep and awake bruxism in Northern Finland Birth Cohort 1966 - a cross-sectional study. Cranio : the journal of craniomandibular practice. 2023:1-11.

Gill SA, Quinonez RB, Deutchman M, Conklin CE, Rizzolo D, Rabago D, et al. Integrating Oral Health into Health Professions School Curricula. Med Educ Online. 2022;27(1):2090308.

Niessen LC, Fontana M, Weyant RJ, Casamassimo PS, Feine J, Karimbux N. Oral health in America 2021: Making a case for curricular change. J Dent Educ. 2022;86(6):637-48.

Doughty J, Macdonald ME, Muirhead V, Freeman R. Oral health-related stigma: Describing and defining a ubiquitous phenomenon. Community Dent Oral Epidemiol. 2023;51(6):1078-83.

Feldman CA, Fredericks-Younger J, Fine DH, Markowitz K, Sabato E. Advancing oral health through practice-based research. J Am Dent Assoc. 2023;154(11):959-62.e2.

Marie Espinoza K. Oral Health Advocacy for People with Special Health Care Needs. Dent Clin North Am. 2022;66(2):245-59.

Wright JT. Oral health: Changing workforce and provision of care. J Am Dent Assoc. 2022;153(4):293-4.

Wright JT, Dye BA. Valuing oral health: Accomplishments and challenges. J Am Dent Assoc. 2022;153(3):193-5.

Dye BA, Albino J. Finding Knowledge to Improve Oral Health for All. J Dent Res. 2022;101(7):739-41.

Aghaloo T. Maintaining Mental Health in Oral and Maxillofacial Surgery. J Oral Maxillofac Surg. 2022;80(10):1575-6.

Peixoto KO, Resende C, Almeida EO, Almeida-Leite CM, Conti PCR, Barbosa GAS, et al. Association of sleep quality and psychological aspects with reports of bruxism and TMD in Brazilian dentists during the COVID-19 pandemic. Journal of applied oral science : revista FOB. 2021;29:e20201089.

Przystańska A, Jasielska A, Ziarko M, Pobudek-Radzikowska M, Maciejewska-Szaniec Z, Prylińska-Czyżewska A, et al. Psychosocial Predictors of Bruxism. BioMed research international. 2019;2019:2069716.

Rajan R, Sun YM. Reevaluating Antidepressant Selection in Patients With Bruxism and Temporomandibular Joint Disorder. Journal of psychiatric practice. 2017;23(3):173-9.

Smardz J, Martynowicz H, Wojakowska A, Michalek-Zrabkowska M, Mazur G, Wieckiewicz M. Correlation between Sleep Bruxism, Stress, and Depression-A Polysomnographic Study. Journal of clinical medicine. 2019;8(9).

Soto-Goñi XA, Alen F, Buiza-González L, Marcolino-Cruz D, Sánchez-Sánchez T, Ardizone-García I, et al. Adaptive Stress Coping in Awake Bruxism. Frontiers in neurology. 2020;11:564431.

Ball J, Darby I. Mental health and periodontal and peri-implant diseases. Periodontol 2000. 2022;90(1):106-24.