

Perceived stress and self-reported bruxism in peruvian dentists: a cross-sectional occupational health study

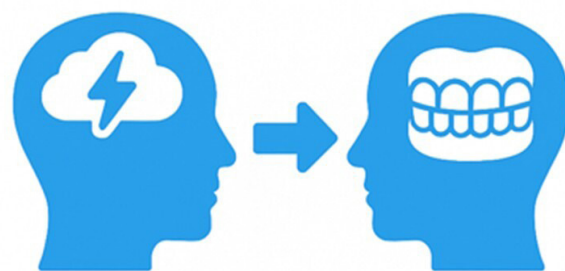
Sheyla Danitza Arcos-Gordillo¹  Vilma Mamani-Cori¹  Yessica Quilca-Soto¹  Jose Manuel Arcos-Gordillo¹ 
Talia Paola Calcina-Asillo¹  Sidgar Orlando Yucra-Sardon¹ 

¹Universidad Nacional del Altiplano de Puno – UNAP. Puno, Perú.
E-mail: vmamani@unap.edu.pe

Graphical Abstract

Highlights

- A significant positive correlation was found between perceived stress and bruxism ($\rho = 0.689$).
- This cross-sectional study included 219 practicing dentists.
- 61.6% of dentists reported at least one manifestation of bruxism.
- Higher perceived stress was associated with greater bruxism severity.
- Private sector dentists showed higher stress and bruxism scores.



PERCEIVED STRESS

LOW 38.4%
MODERATE 23.2%
HIGH 38.4%

SELF-REPORTED BRUXISM

ABSENT 38.4%
MILD 31.9%
MODERATE 21.9%
SEVERE 7.8%

Spearman's $\rho = 0.689$

$p < 0.001$

Higher stress levels are associated with greater severity of bruxism

Abstract

Occupational stress represents a growing risk among healthcare professionals, with dentists being particularly exposed to both physical and emotional demands. One of its potential clinical consequences is bruxism, defined as involuntary masticatory muscle activity that may be influenced by psychological factors. This study aimed to determine the relationship between perceived stress and self-reported bruxism in dentists in the city of Puno, Peru, during 2025. A quantitative, cross-sectional, and correlational study was conducted on a sample of 219 participants. The Stress Reactivity Index (IRE-32) and a 15-item self-report bruxism checklist were used to assess the main variables. Results showed that 38.4% of the participants experienced a high level of perceived stress, and 61.6% reported some degree of bruxism, with the mild form being the most frequent (31.9%). Spearman's correlation analysis showed a strong positive relationship between the two variables ($\rho = 0.689$; $p < 0.001$), indicating that higher levels of perceived stress are associated with greater severity of self-reported bruxism. These findings suggest a significant mutual association between the two conditions, which should be considered when designing prevention and health promotion strategies targeting the mental and musculoskeletal well-being of dental professionals. Due to the cross-sectional design, these findings should be interpreted as associations rather than causal relationships.

Keywords: Bruxism. Dentists. Perceived stress. Occupational health. Self-report.

Associate Editor: Edison Barbieri
Mundo Saúde. 2026,50:e17872025
O Mundo da Saúde, São Paulo, SP, Brasil.
<https://revistamundodasaude.emnuvens.com.br>

Received: 01 august 2025.
Accepted: 17 march 2026.
Published: 30 march 2026.

INTRODUCTION

In the field of occupational health, disorders derived from chronic stress have gained increasing attention, particularly among healthcare professionals exposed to highly demanding work environments. Stress is defined as a physiological, psychological, and behavioral response of the body to stimuli perceived as threatening or challenging to homeostasis^{1,2}. Although this adaptive response is necessary for coping with complex situations, its persistence can lead to detrimental effects on both physical and mental health³.

Scientific literature has documented consistent associations between high levels of stress and sleep disorders, as well as psychosomatic illnesses^{4,5}. In dentistry, occupational stress takes on particular importance due to the inherent conditions of clinical practice, such as technical precision, high patient loads, frequent interaction with anxious patients, and the emotional strain linked to making therapeutic decisions under pressure.

From a psychophysiological perspective, chronic stress may activate the hypothalamic-pituitary-adrenal (HPA) axis and the autonomic nervous system, leading to increased cortisol secretion and sustained muscle tension^{6,7,8}. This physiological response may contribute to increased masticatory muscle activity and parafunctional behaviors such as bruxism, particularly in individuals exposed to prolonged occupational stress.

Within this context, bruxism has been identified as a frequent manifestation linked to emotional tension. Bruxism is a repetitive activity of the masticatory muscles involving clenching or grinding of the teeth and/or mandibular thrusting movements. It may occur during wakefulness or sleep and, although not considered a disease in itself, is recognized as a risk factor for various clinical conditions, including orofacial pain, temporomandibular disorders, hypertrophy of masticatory muscles, and dental wear^{9,10}.

METHODOLOGY

Study Design and Location

A quantitative, non-experimental, cross-sectional, and correlational study was conducted in the city of Puno, Peru. This city, capital of the department of the same name, is located at an altitude between 3,810 and 4,050 meters above sea level, with geographical coordinates of 15°50'15"S and 70°01'18"W. The high-altitude setting of Puno may

The diagnosis of bruxism has been standardized into three levels: possible bruxism (based solely on self-report), probable bruxism (based on self-report and compatible clinical findings), and confirmed bruxism (verified through instrumental recordings such as polysomnography or electromyography)^{11,12,13}. In population studies or clinical contexts with logistical or technological limitations, self-report remains the most widely used approach, offering a valid and cost-effective estimate of the phenomenon despite its subjective nature.

Empirical evidence suggests a possible mutual association between stress and bruxism, in which stress acts as a trigger or modulator of bruxism episodes, and bruxism, in turn, worsens physical and emotional discomfort^{14,15,16,17}. However, these associations may vary depending on sociodemographic variables, lifestyle habits, and specific work conditions. Among dentists, the simultaneous presence of stress and bruxism represents a potential threat to both professional performance and overall health.

Despite growing evidence on stress and bruxism, most studies have focused on dental students or general populations^{18,19,20}, while research involving practicing dentists remains limited. Furthermore, there is scarce evidence from Latin American populations, particularly from Andean or high-altitude regions, where environmental and occupational factors may influence stress responses and musculoskeletal health.

Given this, the present study aimed to assess the burden of perceived stress and the frequency of self-reported bruxism in practicing dentists, as well as to explore the relationship between these phenomena and their potential association with socio-demographic and occupational characteristics, addressing an existing research gap in occupational health among dental professionals in high-altitude Peruvian settings.

represent an additional environmental factor influencing stress responses and sleep-related conditions.

Population and Sample

The study population consisted of 506 licensed and practicing dentists, according to the official registry of the College of Dentists of Peru - Puno

Region. The sample size was determined using the formula for finite populations, with a 95% confidence level, yielding a total of 219 participants. A non-probabilistic convenience sampling method was applied.

Participants were invited through direct contact at their workplaces. A total of 219 dentists agreed to participate and completed the survey. This sampling strategy may limit the external validity of the findings and introduce potential selection bias; however, it was considered appropriate due to feasibility constraints.

Inclusion criteria included being a licensed and practicing dentist in Puno and providing informed consent. Exclusion criteria were dentists who had not practiced in the last three months to ensure current exposure to occupational stressors, or were undergoing psychotherapy for stress or clinical treatment for bruxism.

Variables and Instruments

The main variables were perceived stress and self-reported bruxism. To assess stress, the "Stress Reactivity Index" (IRE-32) validated by González^{1,21} in 1981 was used; this 32-item questionnaire uses a five-point Likert scale. Final scores are interpreted as: low (<0.6), moderate (0.6–1.0), and high (>1.0). In this study, the questionnaire showed excellent reliability (Cronbach's alpha coefficient = 0.962). The IRE-32 has demonstrated adequate psychometric properties in Spanish-speaking populations. No linguistic adaptation was required, as the instrument was administered in standard Spanish.

To assess bruxism, a self-report questionnaire was used, originally developed by Molina *et al.*²² in 1999 and later validated by Estrada *et al.*¹⁷ in 2019. This 15-item dichotomous questionnaire (yes/no) identifies signs and symptoms associated with bruxism. The total score classifies bruxism as absent (0–2), mild (3–5), moderate (6–10), and severe (11–15). In this study, internal consistency was evaluated using the Kuder-Richardson 20 coefficient (KR-20), yielding a value of 0.841, indicating high reliability.

According to the international consensus proposed by Verhoeff *et al.*¹¹, self-report questionnaires

allow identification of possible bruxism but do not confirm a definitive diagnosis, which would require clinical examination or instrumental assessment. This limitation was considered when interpreting the results.

Procedure and Ethical Considerations

Instruments were administered in person at public health centers and private dental offices in Puno. Prior authorization was obtained from the College of Dentists of Peru – Puno Region. Participants received detailed information on the study's objectives and voluntary nature, and confidentiality was ensured through informed consent. The study was approved by the Institutional Ethics Committee of the National University of the Altiplano in Puno (*Certificate No. 084/CIEI UNA-Puno*).

Statistical Analysis

Data were recorded in Microsoft Excel 2016 and analyzed using IBM SPSS Statistics v25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were calculated for all variables. Since the main variables did not follow a normal distribution, non-parametric tests were used.

Spearman's correlation coefficient was applied to evaluate the association between perceived stress and self-reported bruxism scores. For comparisons according to sociodemographic and occupational variables, Mann-Whitney U and Kruskal-Wallis H tests were performed as appropriate.

Effect sizes were calculated to estimate the magnitude of associations. Additionally, a multivariate linear regression model was conducted to evaluate the association between perceived stress and self-reported bruxism while controlling for age, sex, marital status, work sector, daily working hours, and sleep duration. Continuous scores of both instruments were used in the regression model.

Despite the non-normal distribution, linear regression was considered appropriate due to the sample size and the robustness of the method for continuous psychometric scores.

A significance level of $p < 0.05$ was established. Given the exploratory nature of the study, no correction for multiple comparisons was applied.

RESULTS

A total of 219 dentists were surveyed, with a mean age of 36.52 ± 9.2 years (median: 35; IQR: 30–41). Of them, 53.0% were women. Most participants were married (60.7%), and the majority

worked in the private sector (83.6%). Regarding working hours, 71.7% reported working between 7 to 9 hours per day, and 59.4% reported sleeping between 7 to 9 hours daily (Table 1).

Table 1 - Sociodemographic and Work Characteristic of dentists in Puno, Peru, 2025 (n = 219).

Characteristics	Category	n (%)
Age	(Mean ± SD)	36.52 ± 9.2
Sex	Male	103 (47.0)
	Female	116 (53.0)
Marital Status	Single	80 (36.5)
	Married	133 (60.7)
	Divorced	6 (2.7)
Work Sector	Private	183 (83.6)
	Public	36 (16.4)
Daily Working Hours	4-6	27 (12.3)
	7-9	157 (71.7)
	10-12	35 (16.0)
Daily Sleep Hours	0-3	1 (0.5)
	4-6	86 (39.3)
	7-9	130 (59.4)
	9-12	2 (0.9)

Supplementary Table 1 presents the frequency of perceived stress symptoms reported during the last 30 days. The most frequently reported high-intensity symptoms were the need to be alone without being disturbed (20.5%), repeated checking behaviors (17.8%), and increased difficulty sleeping (16.9%). The least frequent symptoms were substance use (7.7%), loss of appetite (8.6%), and gastrointestinal discomfort (8.7%). Overall, 38.4% of participants reported high levels of stress symptomatology, while 21.9% reported no symptoms.

The median perceived stress score was 24 (IQR: 12–46; range: 0–104), calculated as the sum of the IRE-32 items.

Supplementary Table 2 presents the frequency of self-reported bruxism symptoms among dentists. The most frequently reported manifestations were neck muscle pain (61.2%), pain in the head, ears, or temporomandibular joint (55.3%), and difficulty sleeping or physical fatigue (42.9%). Moderate frequencies were observed for pain in the masseter and/or temporalis muscles (34.7%) and the presence of non-functional wear facets (28.8%). The least frequently reported symptoms included hypertrophy of the masseter muscles (4.1%), displacement of restorations (10.0%), and the sensation of jaw locking upon awakening (10.5%).

Overall, 61.6% of dentists reported at least one

manifestation of bruxism, whereas 38.4% did not report related symptoms. The median bruxism score was 3 (IQR: 1–6; range: 0–15), calculated as the sum of the dichotomous self-report items.

The distribution of perceived stress and self-reported bruxism scores is illustrated in Supplementary Figures 1A and 1B. Boxplot inspection showed slightly right-skewed distributions with some upper outliers, supporting the use of non-parametric analyses.

The distribution of bruxism severity according to perceived stress levels is shown in Figure 1. Among participants with low stress, most did not report bruxism (28.8%), while mild (8.4%) and moderate (1.4%) bruxism were uncommon and no cases of severe bruxism were observed. In contrast, among dentists with high stress levels, higher proportions of moderate (18.7%) and severe bruxism (6.8%) were observed, suggesting a possible dose-response pattern.

A statistically significant positive relationship was found between perceived stress scores and self-reported bruxism severity (Spearman's rho = 0.689; p < 0.001), indicating that higher stress levels were associated with greater severity of self-reported bruxism manifestations. The magnitude of this correlation represents a moderate-to-strong effect size.

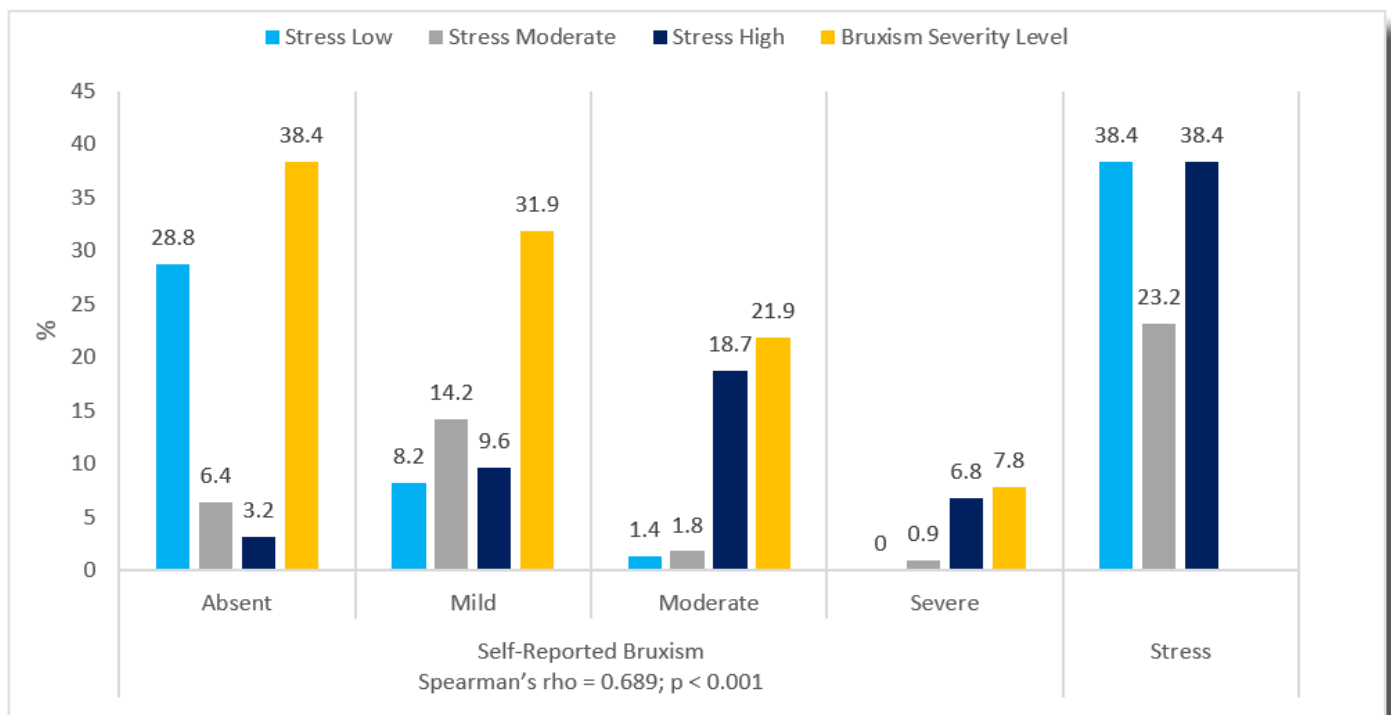


Figure 1 - Distribution of Self-Reported Bruxism Severity according to Perceived Stress levels among Dentists in Puno, Peru, 2025.

To further evaluate this association, a multivariate linear regression model was additionally performed to improve the analytical robustness of the findings. After adjustment for age, sex, marital status, work sector, daily working hours, and sleep duration, perceived stress remained significantly associated

with self-reported bruxism severity ($B = 0.095$; $\beta = 0.676$; 95% CI: 0.081–0.110; $p < 0.001$). The model explained 48.5% of the variance in bruxism scores ($R^2 = 0.485$; adjusted $R^2 = 0.465$). None of the covariates showed statistically significant associations ($p > 0.05$) (Table 2).

Table 2 - Multivariate Linear Regression Analysis of factors associated with Self-Reported Bruxism in Dentists, Puno, Peru, 2025.

Variable	B	Standardized β	95% CI	p-value
Perceived stress score	0.095	0.676	0.081 – 0.110	<0.001
Age	0.022	0.059	-0.027 – 0.071	0.379
Sex	0.672	0.097	-0.032 – 1.376	0.061
Marital status	-0.346	-0.053	-1.058 – 0.366	0.339
Work sector	-0.446	-0.077	-1.126 – 0.234	0.197
Daily working hours	0.263	0.041	-0.427 – 0.954	0.453
Daily sleep duration	0.051	0.008	-0.621 – 0.722	0.882

Notes: B = unstandardized regression coefficient; β = standardized regression coefficient; CI = confidence interval. Dependent variable: Self-reported bruxism score.

Model fit: $R^2 = 0.485$; Adjusted $R^2 = 0.465$; Standard error = 2.525.

Complementary to the multivariate regression analysis, Table 3 presents the bivariate analysis of perceived stress and self-reported bruxism according to sociodemographic and work-related variables. Consistent with the adjusted model, no statistically significant differences were found according to age, sex, marital status, daily working hours, or daily sleep duration ($p > 0.05$).

However, significant differences were observed according to work sector, with small-to-moderate

effect sizes for both perceived stress ($p = 0.022$) and self-reported bruxism ($p = 0.041$). Although this variable showed significance in the bivariate analysis, this association was not maintained in the multivariate regression model, suggesting that its effect may be influenced by other variables included in the adjusted analysis.

Overall, these findings reinforce that perceived stress remains the main factor associated with self-reported bruxism in this population.

Table 3 - Bivariate Analysis of Differences in Perceived Stress and Self-Reported Bruxism according to Sociodemographic and Work-Related Characteristics.

Characteristic	Perceived Stress (p-value)	Self-Reported Bruxism (p-value)
Age	0.099*	0.790*
Sex	0.537**	0.358**
Marital Status	0.403*	0.594*
Work Sector	0.022**	0.041**
Daily Working Hours	0.537*	0.531*
Daily Sleep Hours	0.474*	0.251*

Notes: *Kruskal-Wallis H test; **Mann-Whitney U test, $p < 0.05$ considered statistically significant.

DISCUSSION

The results obtained reveal a considerable prevalence of perceived stress among the dentists included in the study, with a significant proportion of professionals reporting frequent psychological and somatic manifestations. These were mainly expressed as exhaustion, insomnia, digestive symptoms, and a marked need for isolation. Although this study did not identify significant differences in perceived stress levels by sex, previous research, such as that of Shifra *et al.*¹⁶, has reported that stress and somatization levels may increase more markedly, particularly in males, throughout dental training, especially during intense periods such as manual training. This disparity suggests that although stress affects both sexes, its expression and physiological response may differ depending on the context and professional stage evaluated.

From an occupational perspective, dentistry is considered one of the professions most exposed to stress-related factors due to constant interactions with anxious patients, physical postural demands, administrative pressures, and real-time clinical decision-making. Added to this is the high level of commitment health professionals often assume, which, according to Coelho *et al.*²³, may represent an additional risk factor. Their study concluded that excessive commitment — rather than effort-reward imbalance

— was associated with greater allostatic load among healthcare personnel, and that this load mediates the relationship between excessive commitment and the emergence of psychiatric symptoms. This finding underscores that sustained occupational stress responds not only to structural factors but also to individual responses that, if not properly managed, can lead to mental health problems.

Regarding self-reported bruxism, 61.6% of participants reported at least one sign or symptom consistent with this condition. The most frequent manifestations included cervical muscle pain, headaches, and physical fatigue — common indicators associated with both awake and sleep bruxism episodes. Self-report assessment has proven effective in identifying suspected bruxism cases in clinical and occupational settings, as supported by recent studies by Verhoeff *et al.*¹¹ and Owczarek *et al.*²⁴, which support the use of self-administered instruments in clinically knowledgeable populations such as dentists. The findings of this study are consistent with those reported by Babayiğit *et al.*²⁵, who found that self-generated stress was significantly associated with a higher risk of bruxism, particularly in its awake and combined forms. Additionally, they observed a higher prevalence of awake bruxism in dental students (46.6%) compared to medical stu-

dents (34.7%), suggesting a greater susceptibility in populations exposed early to demanding clinical environments. This difference supports the hypothesis that both dental training and practice carry a high psycho-emotional burden, which aligns with the high frequency of bruxism manifestations observed among practicing dentists.

The significant relationship observed between the level of perceived stress and the degree of self-reported bruxism ($\rho = 0.689$; $p < 0.001$) supports a growing body of scientific evidence linking these two conditions from a psychophysiological perspective. Previous studies, such as that of Saczuk *et al.*¹⁴, have shown that chronic stress can activate the hypothalamic–pituitary–adrenal axis, potentially contributing to mandibular muscle hyperactivity and the occurrence of sleep bruxism. This process may also involve cortisol dysregulation associated with chronic activation of the HPA axis, which can alter sleep quality and increase muscle excitability⁸. Furthermore, chronic stress has been associated with autonomic nervous system imbalance characterized by increased sympathetic activity and reduced parasympathetic regulation^{6,26}, mechanisms that may facilitate sustained masticatory muscle activity and parafunctional behaviors such as bruxism.

Likewise, Costa *et al.*¹⁵ emphasize that stress is not only associated with the severity of bruxism but should be considered a relevant risk factor in populations under high emotional demands, such as healthcare professionals. Along the same lines, Phuong *et al.*²⁷ identified a high prevalence of bruxism among medical students in Vietnam, significantly associated with elevated levels of stress, muscle and joint pain, which negatively impacted their oral health–related quality of life. Similarly, Shifra *et al.*¹⁶ reported a positive relationship between stress and awake bruxism, with emotional parameters – such as somatization, anxiety, and depression – significantly higher among students with this disorder. Although these studies focus mainly on students, their findings help to understand the mechanisms through which sustained emotional burden influences the emergence of parafunctional disorders. In the context of dentists, this relationship is especially relevant given their constant exposure to cognitive and emotional demands that may trigger or intensify involuntary muscular responses such as bruxism, affecting both their physical and professional well-being. However, due to the cross-sectional nature of the study, these findings should be interpreted as associations rather than causal relationships, and longitudinal studies are needed to clarify the temporal direction of this relationship.

Although most previous studies analyzing the

relationship between stress and bruxism have been conducted in dental students, they provide a useful reference point given the similarity in academic training and early exposure to stressful clinical settings. However, it is important to note that practicing dentists face additional pressures, such as clinical decision-making under uncertainty, ongoing care of emotionally distressed patients, and administrative burden, which may intensify occupational stress and its clinical manifestations. Additionally, ergonomic factors such as prolonged static working postures, cervical flexion, repetitive movements, and musculoskeletal overload may act as interacting factors^{28,29}. These conditions are common in dental practice and have been associated with increased neck and masticatory muscle tension, which may contribute to both perceived stress and bruxism-related symptoms. Therefore, while findings in students provide valuable insights, the results of this study contribute to filling an important gap in the literature by focusing on active professionals, offering more representative evidence of the current dental work reality.

Although no significant differences were observed in stress or bruxism levels based on age, sex, marital status, or sleep duration, a statistically significant difference was identified regarding the work sector. Dentists working in the private sector reported higher levels of perceived stress and self-reported bruxism. These findings suggest that the demands of private clinical practice – such as workload intensity, administrative responsibilities, and performance pressure – may contribute to a greater psychosocial burden, highlighting the need for targeted support and preventive strategies in this professional setting.

In addition, private practice in low and middle-income settings may involve additional stressors such as income instability, variability in patient flow, and productivity-related financial pressure. These contextual factors may partially explain the higher stress and bruxism levels observed in this group.

Despite the methodological strength of this study, some limitations must be considered. First, the cross-sectional design prevents establishing causal relationships between perceived stress and self-reported bruxism, limiting interpretation to statistical associations. Additionally, the subjective nature of the instruments used, particularly in the assessment of bruxism, may be influenced by recall or social desirability bias, even in a clinically knowledgeable population such as dentists. It should also be noted that this study assessed possible bruxism based on self-report rather than clinically confirmed or instrumentally diagnosed bruxism, which

may limit diagnostic accuracy.

Another aspect to consider is the possible presence of uncontrolled confounding factors, such as sleep disorders, stimulant use, or previous musculoskeletal conditions. Additionally, the study was conducted in a high-altitude environment (approximately 3,800 meters above sea level), where chronic hypobaric hypoxia could influence fatigue, sleep quality, and physiological stress responses,

CONCLUSION

The findings of this study support the existence of a significant relationship between perceived stress and self-reported bruxism in dentists, which remained significant after adjustment for sociodemographic and occupational variables, suggesting a reciprocal relationship hypothesis rather than a causal relationship. On one hand, high levels of stress may act as associated factors of clinical bruxism manifestations; on the other, the persistent presence of symptoms associated with bruxism—such as jaw pain, sleep disturbances, or muscle fatigue—could increase emotional burden and contribute to the perception of stress.

This dynamic interaction highlights the need to consider bruxism not merely as an isolated clinical sign, but as a potential indicator of psychosocial

potentially acting as an environmental confounder³⁰. Likewise, variables such as caffeine consumption, energy drink intake, and other behavioral stimulants were not assessed and could influence both stress perception and sleep-related bruxism. Finally, although the sample was representative of dentists from Puno, the findings may not be generalizable to other geographical contexts with different work dynamics.

overload. These findings should be interpreted within the context of dentists working in environments with occupational and sociodemographic characteristics similar to those of Puno, Peru.

In this regard, it is essential to promote intervention strategies that holistically address both the mental health and musculoskeletal well-being of dental professionals, particularly those exposed to demanding work environments. These strategies may include routine stress screening programs, workplace ergonomic interventions to reduce musculoskeletal overload, and institutional access to psychological support services as preventive occupational health measures.

Due to the cross-sectional design of this study, the findings should be interpreted as statistical associations and not as evidence of causality.

CRedit author statement

Conceptualization: Arcos-Gordillo, SD; Mamani-Cori, V; Arcos-Gordillo, JM; Quilca-Soto, Y. Methodology: Arcos-Gordillo, SD; Mamani-Cori, V. Validation: Arcos-Gordillo, SD; Yucra-Sardón, SO; Mamani-Cori, V. Statistical analysis: Mamani-Cori, V. Formal analysis: Mamani-Cori, V; Calcina-Asillo, TP. Investigation: Arcos-Gordillo, SD; Arcos-Gordillo, JM; Mamani-Cori, V. Resources: Arcos-Gordillo, SD; Mamani-Cori, V; Arcos-Gordillo, JM. Writing-original draft preparation: Mamani-Cori, V; Calcina-Asillo, TP. Writing-review and editing: Mamani-Cori, V; Arcos-Gordillo, SD; Quilca-Soto, Y; Arcos-Gordillo, JM; Calcina-Asillo, TP; Yucra-Sardón, SO. Visualization: Yucra-Sardón, SO; Mamani-Cori, V; Quilca-Soto, Y. Supervision: Arcos-Gordillo, SD; Mamani-Cori, V. Project administration: Arcos-Gordillo, SD; Mamani-Cori, V.

All authors have read and agreed to the published version of the manuscript.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

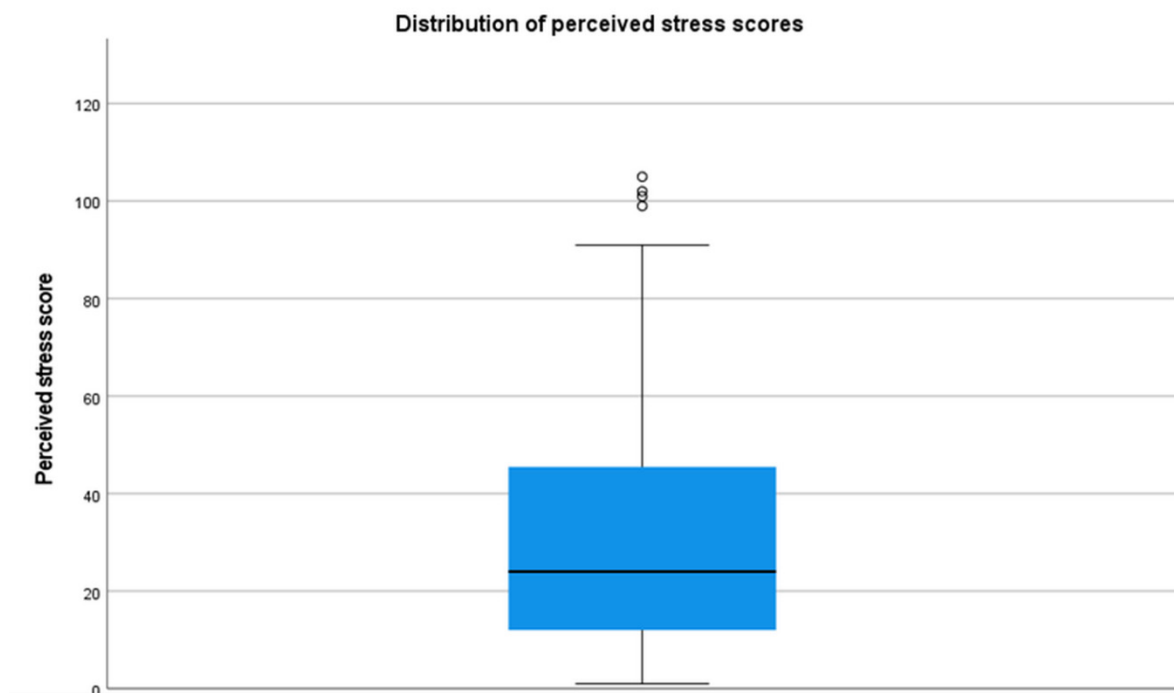
REFERENCES

1. González de Rivera JL. Stress reactivity patterns. In: VI World Congress of the International College of Psychosomatic Medicine. Montreal, Canada; 1981.
2. World Health Organization [website]. Estrés – questions and answers. Geneva; 2023 [accessed Jun 27, 2025]. Available at: <https://www.who.int/es/news-room/questions-and-answers/item/stress>
3. World Health Organization. Sensibilizando sobre el estrés laboral en los países en desarrollo [Internet]. Geneva; 2008 [accessed Jun 27, 2025]. Available at: https://iris.who.int/bitstream/10665/43770/1/9789243591650_spa.pdf
4. Lijun Z, Yanping B, Shuhui T, Xuequn R, Meiyun L. The characteristics and risk factors of cardiovascular diseases and psychological status in science and technologyists. *Zhonghua Nei Ke Za Zhi*. 2022;61(9):1037–1043. DOI: <https://doi.org/10.3760/cma.j.cn112138-20220124-00077>
5. Haudrich EA, Burns EK, Gupta T, Haas GL, Horton LE. The day-to-day influence of trauma exposure and sleep dysfunction on everyday stress in youth at familial high-risk for psychotic disorders. *Schizophr Res*. 2024;274:535–544. DOI: <https://doi.org/10.1016/j.schres.2024.10.024>
6. Romero EER, Young J, Salado-Castillo R. Fisiología del estrés y su integración al sistema nervioso y endocrino. *Rev Med Cient*. 2019;32:61–70. DOI: <https://doi.org/10.37416/rmc.v32i1.535>
7. Villada C, Hidalgo V, Almela M, Salvador A. Individual differences in the psychobiological response to psychosocial stress (Trier Social Stress Test): The relevance of trait anxiety and coping styles. *Stress and Health*. 2016;32(2):90–99. DOI: <https://doi.org/10.1002/smi.2582>

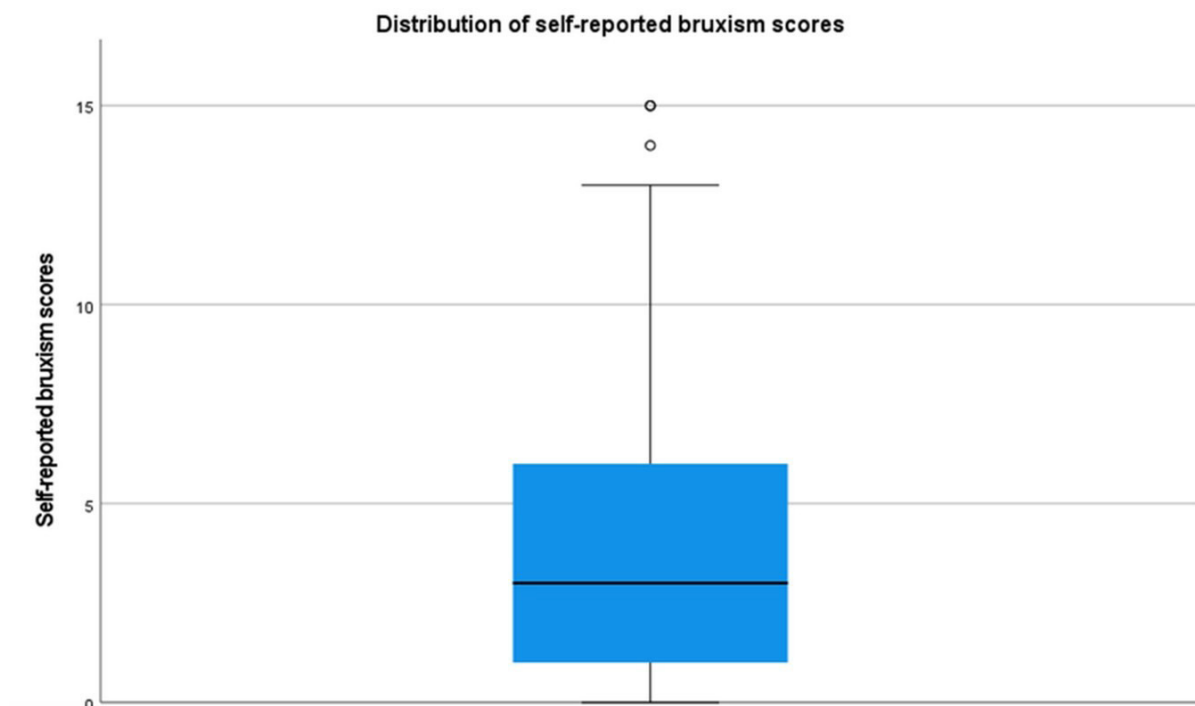
8. Dharmadhikari S, Romito LM, Dzemidzic M, Dydak U, Xu J, Bodkin CL, et al. GABA and glutamate levels in occlusal splint-wearing males with possible bruxism. *Arch Oral Biol.* 2015;60(7):1021–1029. DOI: <https://doi.org/10.1016/j.archoralbio.2015.03.006>
9. Lobbezoo F, Ahlberg J, Glaros AG, Kato T, Koyano K, Lavigne GJ, et al. Bruxism defined and graded: An international consensus. *J Oral Rehabil.* 2013;40(1):2–4. DOI: <https://doi.org/10.1111/joor.12011>
10. Amorim CSM, Vieira GF, Firsoff EFO, Frutuoso JRC, Puliti E, Marques AP. Symptoms in different severity degrees of bruxism: A cross-sectional study. *Fisioter Pesqui.* 2016;23(4):423–430. DOI: <https://doi.org/10.1590/1809-2950/15988723042016>
11. Verhoeff MC, Lobbezoo F, Ahlberg J, Bender S, Bracci A, Colonna A, et al. Updating the bruxism definitions: Report of an international consensus meeting. *J Oral Rehabil.* 2025;52(9):1335-1342. DOI: <https://doi.org/10.1111/joor.13985>
12. Przysańska A, Jasielska A, Ziarko M, Pobudek-Radzikowska M, Maciejewska-Szaniec Z, Prylińska-Czyżewska A, et al. Psychosocial predictors of bruxism. *Biomed Res Int.* 2019;1:2069716. DOI: <https://doi.org/10.1155/2019/2069716>
13. Smardz J, Martynowicz H, Wojakowska A, Michalek-Zrabkowska M, Mazur G, Wieckiewicz M. Correlation between sleep bruxism, stress, and depression—A polysomnographic study. *J Clin Med.* 2019;8(9):1344. DOI: <https://doi.org/10.3390/jcm8091344>
14. Saczuk K, Lapinska B, Wilmont P, Pawlak L, Lukomska-Szymanska M. Relationship between sleep bruxism, perceived stress, and coping strategies. *Int J Environ Res Public Health.* 2019;16(17):3193. DOI: <https://doi.org/10.3390/ijerph16173193>
15. Costa FDS, Fernandez MDS, Silva-Junior IF da, Karam SA, Chisini LA, Goettens ML. Association involving possible sleep bruxism, stress, and depressive symptoms in Brazilian university students: A cross-sectional study. *Sleep Sci.* 2023;16(3):e317–322. DOI: <https://doi.org/10.1055/s-0043-1772808>
16. Levartovsky S, Msarwa S, Reiter S, Eli I, Winocur E, Sarig R. The association between emotional stress, sleep, and awake bruxism among dental students: A sex comparison. *J Clin Med.* 2022;11(1):10. DOI: <https://doi.org/10.3390/jcm11010010>
17. Evaristo-Chiyong TA. Estados psicoemocionales y presencia de bruxismo en estudiantes de odontología peruanos. *Odovtos Int J Dent Sci.* 2019;21(3):111–117. DOI: <https://doi.org/10.15517/ijds.v0i0.34414>
18. Bakri MM, Aljabri MY, Hezam AAA, Abiri ZA, Mubarak LM, Alhamidhi AA, et al. Association of self-reported bruxism and academic performance in Jazan University dental students: A cross-sectional study. *Natl J Maxillofac Surg.* 2024;15(3):379. DOI: https://doi.org/10.4103/njms.njms_47_24
19. Martínez-Hernández MM, González-Alamilla R, Gutiérrez-Sánchez JE, Cuevas-Suárez CE, Monjarás-Ávila CU, Monjarás-Ávila AJ, et al. Self-Report of the perception of stress and signs of bruxism generated during the pandemic in student of the health area. *Odovtos Int J Dent Sci.* 2022;24(3):200–212. DOI: <https://doi.org/10.15517/ijds.2022.50877>
20. Durga Prasad Naik K, Gortha P, Varma M, Kumar M, Koruprolu RL, Rameswarapu M, et al. Prevalence of bruxism and its association with stress among dental students: A questionnaire-based cross-sectional study. *J Den Indones.* 2025;32(3):153–159. DOI: <https://doi.org/10.14693/jdi.v32i3.1872>
21. Monterrey AL, González de Rivera JL, de las Cuevas C, Rodríguez-Pulido F. El índice de reactividad al estrés (IRE): ¿rasgo o estado? *Rev Psiquiatr Fac Med Barna.* 1991;18(1):23–27.
22. Molina OF, Dos Santos J, Nelson SJ, Nowlin T. A Clinical study of specific signs and symptoms of CMD in bruxers classified by the degree of severity. *Cranio.* 1999;17(4):268–279. DOI: <https://doi.org/10.1080/08869634.1999.11746104>
23. Coelho D, Yamaguchi S, Harb A, Souza-Talarico JN. Effort-reward and overcommitment at work and psychiatric symptoms in healthcare professionals: The mediation role of allostatic load. *Compr Psychoneuroendocrinol.* 2024;17:100225. DOI: <https://doi.org/10.1016/j.cpnc.2024.100225>
24. Owczarek JE, Lion KM, Radwan-Oczko M. The impact of stress, anxiety and depression on stomatognathic system of physiotherapy and dentistry first-year students. *Brain Behav.* 2020;10(10):e01797. DOI: <https://doi.org/10.1002/brb3.1797>
25. Babayigit O, Büyükkalaycı FN, Altun S. The interplay of academic procrastination, self-generated stress, and self-reported bruxism among medical and dental students: a cross-sectional study. *BMC Psychol.* 2024;12(1). DOI: <https://doi.org/10.1186/s40359-024-02105-w>
26. Sic A, Bogicevic M, Brezic N, Nemr C, Knezevic NN. Chronic stress and headaches: The role of the HPA axis and autonomic nervous system. *Biomedicines* 2025;13(2):463. DOI: <https://doi.org/10.3390/biomedicines13020463>
27. Phuong NTT, Ngoc VTN, Linh LM, Duc NM, Tra NT, Anh LQ. Bruxism, related factors and oral health-related quality of life among Vietnamese medical students. *Int J Environ Res Public Health.* 2020;17(20):7408. DOI: <https://doi.org/10.3390/ijerph17207408>
28. Ng A, Hayes MJ, Polster A. Musculoskeletal disorders and working posture among dental and oral health students. *Healthcare* 2016;4(1):13. DOI: <https://doi.org/10.3390/healthcare4010013>
29. Kawtharani AA, Chemeisani A, Salman F, Younes AH, Msheik A. Neck and musculoskeletal pain among dentists: A review of the literature. *Cureus.* 2023;15(1):e33609. DOI: <https://doi.org/10.7759/cureus.33609>
30. Calderon-Jofre R, Moraga D, Moraga FA. The effect of chronic intermittent hypobaric hypoxia on sleep quality and melatonin serum levels in Chilean miners. *Front Physiol.* 2022;12:809360. DOI: <https://doi.org/10.3389/fphys.2021.809360>

How to cite this article: Arcos-Gordillo, S.D., Mamani-Cori, V., Quilca-Soto, Y., Arcos-Gordillo, J.M., Calcina-Asillo, T.P., Yucra-Sardon, S.O. (2026). Perceived stress and self-reported bruxism in peruvian dentists: a cross-sectional occupational health study. *O Mundo Da Saúde*, 50. <https://doi.org/10.15343/0104-7809.202650e17872025I>. *Mundo Saúde*. 2026,50:e17872025.

SUPPLEMENTARY MATERIAL



Supplementary Figure 1A - Distribution of perceived stress scores among dentists in Puno, Peru, 2025. Source: Authors' own data (2025).



Supplementary Figure 1B - Distribution of self-reported bruxism scores among dentists in Puno, Peru, 2025. Source: Authors' own data (2025).

Supplementary Table 1. Summary of perceived stress symptoms among dentists in Puno, Peru, 2025

Symptoms perceived during the last 30 days (n = 219)	None		Mild		Moderate		High		Very High		Cronbach's Alpha (α) if item deleted
	n	%	n	%	n	%	n	%	n	%	
1. Restlessness, inability to relax and remain calm	74	33.8	69	31.5	56	25.6	13	5.9	7	3.2	0.961
2. Loss of appetite	109	49.8	54	24.7	37	16.9	13	5.9	6	2.7	0.961
3. Avoiding the problem and thinking about something else	76	34.7	66	30.1	55	25.1	16	7.3	6	2.7	0.961
4. Urge to sigh, chest tightness, sensation of breathlessness	108	49.3	53	24.2	34	15.5	16	7.3	8	3.7	0.960
5. Palpitations, tachycardia	123	56.2	43	19.6	32	14.6	13	5.9	8	3.7	0.960
6. Feelings of depression and sadness	86	39.3	70	32.0	38	17.4	16	7.3	9	4.1	0.960
7. Increased need to eat, heightened appetite	83	37.9	54	24.7	45	20.5	29	13.2	8	3.7	0.961
8. Tremors, tics, or muscle cramps	110	50.2	52	23.7	36	16.4	16	7.3	5	2.3	0.961
9. Increased activity	81	37.0	50	22.8	63	28.8	19	8.7	6	2.7	0.961
10. Nausea, dizziness, unsteadiness	135	61.6	37	16.9	24	11.0	18	8.2	5	2.3	0.960
11. Effort to reason and remain calm	99	45.2	53	24.2	37	16.9	21	9.6	9	4.1	0.960
12. Tingling or numbness in hands, face, etc.	124	56.6	46	21.0	28	12.8	14	6.4	7	3.2	0.961
13. Digestive discomfort, abdominal pain, etc.	105	47.9	62	28.3	30	13.7	12	5.5	10	4.6	0.961
14. Headaches	92	42.0	58	26.5	42	19.2	16	7.3	11	5.0	0.961
15. Enthusiasm, higher energy, or enjoyment of the situation	66	30.1	43	19.6	63	28.8	35	16.0	12	5.5	0.962
16. Decreased activity	86	39.3	71	32.4	38	17.4	17	7.8	7	3.2	0.961
17. Loss of sexual appetite or sexual difficulties	125	57.1	42	19.2	28	12.8	18	8.2	6	2.7	0.961
18. Tendency to blame someone or something	121	55.3	45	20.5	29	13.2	16	7.3	8	3.7	0.961
19. Drowsiness or increased need for sleep	69	31.5	71	32.4	48	21.9	18	8.2	13	5.9	0.961
20. Apprehension, feeling of becoming ill	109	49.8	58	26.5	29	13.2	17	7.8	6	2.7	0.960
21. Exhaustion or excessive fatigue.	79	36.1	74	33.8	30	13.7	28	12.8	8	3.7	0.961
22. Frequent urination	107	48.9	60	27.4	31	14.2	16	7.3	5	2.3	0.961
23. Scratching, nail-biting, rubbing, etc.	125	57.1	41	18.7	33	15.1	12	5.5	8	3.7	0.961
24. Feelings of aggression or increased irritability	106	48.4	60	27.4	30	13.7	13	5.9	10	4.6	0.960

to be continued...

continuation...

25. Diarrhea	158	72.1	24	11.0	18	8.2	11	5.0	8	3.7	0.961
26. Drinking, smoking, or taking something (gum, pills, etc.)	129	58.9	50	22.8	23	10.5	13	5.9	4	1.8	0.961
27. Need to be alone without being disturbed	83	37.9	57	26.0	34	15.5	32	14.6	13	5.9	0.961
28. Increased sexual appetite	129	58.9	33	15.1	30	13.7	12	5.5	15	6.8	0.961
29. Anxiety, increased tendency toward fear or worry	108	49.3	55	25.1	27	12.3	21	9.6	8	3.7	0.960
30. Tendency to repeatedly check if everything is in order	69	31.5	57	26.0	54	24.7	32	14.6	7	3.2	0.961
31. Greater difficulty sleeping	97	44.3	58	26.5	27	12.3	26	11.9	11	5.0	0.960
32. Need to be accompanied and to receive advice	94	42.9	64	29.2	32	14.6	18	8.2	11	5.0	0.961
Global	48	21.9	42	19.2	45	20.5	42	19.2	42	19.2	0.962

Source: Authors' own data

Note: Responses were measured using a five-point Likert scale (None, Mild, Moderate, High, Very high). Cronbach's alpha indicates internal consistency of the scale.

Supplementary Table 2. Self-reported bruxism symptoms among dentists in Puno, Peru, 2025

Questions	Yes		No		KR-20
	n	%	n	%	
During the last 30 days (n = 219)					
P1. Do you grind your teeth while sleeping, while awake, or has someone heard you do it?	62	28.3	157	71.7	0.826
P2. While sleeping or awake, do your jaws clench involuntarily?	60	27.4	159	72.6	0.829
P3. Do you feel jaw stiffness or fatigue upon awakening?	51	23.3	168	76.7	0.824
P4. Do you experience jaw stiffness or fatigue at any time during the day?	57	26.0	162	74.0	0.827
P5. Have you ever awakened at night due to the sound of your teeth grinding?	29	13.2	190	86.8	0.832
P6. Upon waking, do you feel that your jaw gets “locked,” “stuck,” or “dislocated”?	23	10.5	196	89.5	0.831
P7. Upon waking or during the day, have you experienced pain in the masseter and/or temporalis muscles?	76	34.7	143	65.3	0.824
P8. Upon waking or during the day, have you experienced neck muscle pain?	134	61.2	85	38.8	0.832
P9. Upon waking or during the day, do you frequently experience dental pain or discomfort?	34	15.5	185	84.5	0.830
P10. Upon waking or during the day, have you had pain in the head, ears, or TMJ (temporomandibular joint)?	121	55.3	98	44.7	0.835
P11. Upon waking or during the day, do you sometimes feel unable to open your mouth?	37	16.9	182	83.1	0.831
P12. Do you have difficulty sleeping or experience physical fatigue?	94	42.9	125	57.1	0.838
P13. Have you noticed any displacement of dental restorations?	22	10.0	197	90.0	0.841
P14. Have you noticed hypertrophy (enlargement) of your masseter muscles?	9	4.1	210	95.9	0.841
P15. Have you noticed the presence of non-functional wear facets?	63	28.8	156	71.2	0.832
Global	135	61.6	84	38.4	0.841

Source: Authors' own data

Note: Responses were recorded dichotomously (Yes/No). KR-20 indicates internal consistency reliability of the bruxism scale.

