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# BURNOUT SYNDROME AND PSYCHOLOGICAL WORKPLACE VIOLENCE AMONG PERUVIAN PHYSICIANS: A CROSS-SECTIONAL STUDY

# SÍNDROME DE BURNOUT Y VIOLENCIA PSICOLÓGICA LABORAL EN MÉDICOS PERUANOS: UN ESTUDIO TRANSVERSAL

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## DEDICATORIA

A Dios y a mi familia, por ser mi fortaleza y sostén cada día.

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Agradezco a mis padres, José y Roxana, por su amor incondicional y apoyo constante a lo largo de este camino.

## DECLARACIONES Y CONFLICTO DE INTERÉS

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## ABSTRACT

**Background**: Physicians face increased emotional weariness as a result of the inherent stress and responsibility of their roles. In addition, they are vulnerable to abuse, coercion, and aggressiveness in their workplace settings. The link between burnout syndrome and psychological workplace violence (WPV) is complex and must be viewed as bidirectional. We assessed the association between the levels of burnout and psychological WPV among their colleagues among Peruvian physicians. **Methods**: We performed a cross-sectional study that surveyed licensed Peruvian physicians actively practicing clinical medicine from April to December 2023. A non-probability convenience sampling via hospital interviews and diffusion through online platforms was carried out. The SPV-Health scale, validated for the Peruvian context, assessed psychological violence, while the MBI-HSS evaluated burnout dimensions. Descriptive statistics and Poisson regression models, adjusting for covariates, were employed for analysis. **Results**: We included 384 medical doctors; most participants worked in urban areas, with nearly half being specialists or subspecialists, predominantly in medicine services. Physicians experiencing burnout were 4.04 times more likely to encounter psychological violence compared to those without burnout (95% CI: 2.45–6.66), even after adjusting for age, sex, medical positions and years of medical practice (PR: 3.93; 95% CI: 2.35–6.57). Among the risk factors for psychological violence, being a resident practitioner was the only significant one (PR: 1.79; 95% CI: 1.18–2.73). **Conclusion**: Our study underscores a significant association between Burnout Syndrome among Peruvian doctors and their experience of psychological WPV from colleagues. Tailored interventions addressing these challenges are imperative, with organizational strategies offering potential while interventions for WPV require further investigation.



**Keywords:** Burnout, Professional, Workplace violence, Peru (source: MeSH)

## RESUMEN

**Antecedentes**: Los médicos enfrentan un mayor desgaste emocional por el estrés y la responsabilidad inherente a su función. Además, son vulnerables al abuso, coerción y agresividad en sus entornos laborales. La relación entre el síndrome de burnout (SB) y la violencia psicológica laboral (VPL) es compleja y debe considerarse bidireccional. Evaluamos la asociación entre los niveles de burnout y la VPL entre médicos peruanos. **Métodos**: Realizamos un estudio transversal que encuestó a médicos peruanos colegiados con licencia y contrato laboral activo desde abril hasta diciembre de 2023. Se utilizó un muestreo no probabilístico por conveniencia a través de entrevistas en hospitales y difusión en línea. La VPL se evaluó mediante la escala SPV-Health, validada en el contexto peruano, mientras que las dimensiones del burnout se evaluaron mediante el MBI-HSS. Se empleó estadística descriptiva y modelos de regresión de Poisson ajustados por covariables. **Resultados**: Se incluyeron 384 médicos. La mayoría trabajaba en zonas urbanas y casi la mitad eran especialistas o subespecialistas, predominantemente en servicios de medicina. Los médicos con burnout presentaron una prevalencia de violencia psicológica 4,04 veces la de aquellos sin burnout (IC del 95 %: 2,45 - 6,66). Esta asociación persistió tras ajustar por edad, sexo, cargo médico y años de práctica profesional (RP: 3,93; IC del 95 %: 2,35 - 6,57). Entre los factores de riesgo de violencia psicológica, ser médico residente fue el único estadísticamente significativo (RP: 1,79; IC del 95 %: 1,18 - 2,73). **Conclusiones**: Este estudio identificó una asociación robusta entre el SB en médicos peruanos y su percepción de ser víctimas de VPL por parte de sus colegas. Es fundamental implementar intervenciones adaptadas para abordar estos problemas. Las estrategias organizacionales ofrecen posibilidades prometedoras, mientras que las intervenciones dirigidas a la violencia laboral requieren mayor investigación.



**Palabras claves**: Burnout, Violencia Laboral, Perú

# I. BACKGROUND

Burnout syndrome (BS) is a condition that arises from inadequately managed chronic stress within professional settings, encompassing three dimensions, emotional exhaustion, cynicism, and diminished personal accomplishment (1). It is associated with occupations requiring continuous social interactions or involving provider-patient relationships, such as in healthcare (1). In Latin America, the prevalence of BS has emerged as a growing global concern, with systematic reviews indicating varying prevalence rates. A review of 24 studies highlighted burnout rates among healthcare professionals in Brazil ranging from 7.1% to 86.2%, while in Mexico, rates were found to be between 20.5% and 42.3% (2). In Peru, Solís-Cóndor et al. found that among Peruvian physicians, the prevalence of BS (8.2%) exceeded that of nurses (2.4%) and was influenced by factors such as the level of poverty, medical specialties, care levels, job dissatisfaction, and more (3). Various factors can increase the risk of BS, including demographics (such as sex, age, and cultural background), financial and workplace-related aspects (4). Among these, the latter stands out as the most influential in triggering the onset and symptoms of BS, encompassing the level of training, specialty, excessive workloads, poor work-life balance, and a negative work environment (4,5). Additionally, a meta-analysis during the COVID-19 pandemic found a burnout prevalence of 42% among physicians in South America (6) intensified existing stressors and introduced new challenges, such as increased workloads, fear of contagion and

emotional strain from treating critically ill patients (7). BS significantly impacts the health and quality of life of these professionals. Physicians, in particular, face heightened susceptibility to cardiovascular or metabolic diseases, occupational injuries, drug abuse, and suicide (5,8). Additionally, it is associated with a decline in professionalism and decreased labor productivity due to presenteeism or absenteeism (8,9). Overall, depersonalization affects their relationships both with patients and colleagues (10).

In Peru, the medical profession is hindered by structural and systemic barriers that impact both patients and healthcare providers. The fragmented and centralized healthcare system leads to unequal distribution of resources, particularly in rural areas (11). Physicians in underserved regions face high patient loads, limited resources, and inadequate infrastructure, while wealthier populations receive better care (12). These conditions contribute to physician burnout and create environments where violence is more likely to occur, underscoring the need for research in the Peruvian context.

Workplace violence (WPV), according to the World Health Organization, is defined as the abuse, coercion or assault of staff in any circumstance related to their work (13). It can be perpetrated not only by patients, former patients, or their visitors, but also by colleagues and staff. Despite its significance in the healthcare sector, limited literature addresses WPV from colleagues (14). In Peru, a cross-sectional analysis revealed that nearly two-thirds of medical

residents reported having suffered worker to worker violence sometime during their residency (14). Psychological WPV involves isolation, intimidation, and undermining, encompassing actions such as verbal abuse, bullying, harassment, threats, withholding information, ignoring presence, obstructing growth opportunities, and criticizing work. This emotional burden correlates with psychological distress, post-traumatic stress disorder, and fear among health workers, contributing to a sense of insecurity and diminished self-value (15).

An increased risk of BS is associated with psychological WPV among healthcare professionals, particularly physicians who face heightened emotional burnout due to the inherent stress and responsibility of their roles (16–18). Interestingly, a networked study conducted among physicians revealed a correlation between worker-on-worker psychological harm and burnout, ultimately resulting in elevated turnover intention and instances of self-harm or death (19). The relationship between burnout syndrome and psychological WPV is complex and should be understood bidirectionally. While multiple studies have documented the influence of WPV on burnout, there is a significant gap in understanding how burnout syndrome might, in turn, influence the occurrence of WPV. A comprehensive understanding holds significant importance as it can pave the way for the development of targeted and effective interventions aimed at both preventing burnout and mitigating the risk of WPV in healthcare settings. This safeguards the well-being of healthcare professionals and promotes high-quality patient care by fostering healthier

work environments. In this study, we evaluated the association between the levels of burnout and psychological WPV among Peruvian physicians and explored the factors associated with psychological violence.

## II. OBJECTIVES

In this study, we evaluated the association between the levels of burnout and psychological WPV among Peruvian physicians and explored the factors associated with psychological violence.

## III. METHODS

### Study design, setting and participants

We conducted an analytical cross-sectional study based on an online survey from April to December of 2023. We followed the STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) guidelines for cross-sectional studies (Supplementary Material 1) (20). In Peru, medical surgeons are represented nationally by the Colegio Médico del Perú (CMP). This institution, governed by internal public law, possesses autonomy conferred by the Political Constitution of Peru (https://www.cmp.org.pe). Licensed doctors operate within the national territory, exercising jurisdiction within the 27 headquarters of the Regional Councils of the CMP. For the present study, we included physicians who had obtained a medical license in Peru, were of Peruvian nationality, and held an active employment contract in our country

within the last 6 months at the time of the survey. Additionally, we considered for enrollment only physicians who were actively practicing medicine in the clinical setting. We excluded physicians who provided inadequate or incomplete information in the questionnaire or refused to give informed consent.

**Sample**

Given the exploratory nature of the study, we calculated the sample size based on a population of 99,768 licensed physicians in Peru (as of February 2023) (21). We considered a conservative assumption that a relationship between psychological violence and burnout syndrome existed in 50% of Peruvian physicians, with a confidence level of 95% and a margin of error of 5%, resulting in a required sample size of 384 participants (Supplementary Material 2). Recognizing that not all physicians have access to electronic communication, we employed a non-probability convenience sampling method.

**Procedures**

Before commencing the online survey, all participants provided voluntary consent. Three medical students and a pediatrician oversaw the survey administration, and all had completed the Investigación-Quipu or CITI Program's Responsible Conduct in Research training (https://cri.andeanquipu.org, https://about.citiprogram.org). Physicians were invited to participate through various channels, including conducting

interviews in hospitals, health centers, and clinics, as well as distributing the survey via online platforms such as Facebook, Twitter, Instagram, and WhatsApp.

**Variables**

The data collection process involved administering a survey (Supplementary Material 3) comprising three sections: Bio-socio demographic information; Maslach Burnout Inventory - Human Services Survey (MBI-HSS); and Brief Scale for Assessing Psychological Violence in Healthcare Professionals (SPV-Health).

**Main outcome**

The Scale of Psychological Violence in Health Professionals (SPV-Health) is a brief scale designed to assess psychological violence experienced by healthcare professionals. This tool has been validated and proven reliable specifically for the Peruvian context (22). The scale comprises 13 items categorized into three primary factors: Isolation violence, which involves actions that isolate or marginalize individuals and undermine their work (5 items); Intimidation violence, encompassing behaviors like humiliation, threats, intentional disregard, and denial of educational or training opportunities (4 items); and Undermining violence, which includes behaviors that erode self-esteem, such as exclusion, suppression of expression, work criticism, and minor failure penalties (4 items). Each item is rated on a scale from 1 (never) to 4 (always), with higher scores indicating greater exposure to psychological violence within

each specific category. Each item was rated on a scale from 1 (never) to 4 (always). These scores were then categorized using a percentile scale, with 26 points set as the cut-off to distinguish between high and low levels of psychological violence (23).

**Exposure**

The Maslach Burnout Inventory-Human Service Survey (MBI-HSS) comprises 22 items across three dimensions: emotional exhaustion, depersonalization, and personal accomplishment (1). Each item is evaluated using a seven-point Likert scale, ranging from 1 ("never") to 6 ("every day"). Additionally, each dimension is further categorized into three levels of burnout (low, moderate, and high) based on the achieved score. The emotional exhaustion dimension, consisting of 9 items, pertains to feeling overwhelmed by excessive workloads, with scores ranging from 0 to 54. Cut-off points for low, moderate, and high burnout are $< 19$ points, 19–26 points, and $\geq 27$ points, respectively. The depersonalization dimension, comprising 5 items, reflects detachment or indifference toward work or patients, with scores ranging from 0 to 30. Cut-off points for low, moderate, and high burnout are $< 6$ points, 6–9 points, and $\geq 10$ points, respectively. The personal accomplishment dimension, consisting of 8 items, reflects individuals' perceptions of the significance of their work and feelings of competence, with scores ranging from 0 to 48. Cut-off points for low, moderate, and high burnout are $\geq 40$ points, 34–39 points, and $< 34$ points, respectively. Overall, BS is characterized by high levels of emotional

exhaustion and depersonalization, along with low levels of personal accomplishment (24). Application of this instrument to Peruvian physicians demonstrates internal structural validity assessed through Exploratory Factor Analysis, Kaiser–Meyer–Olkin test (0.90), and Bartlett's test of sphericity ($p < 0.001$) (25). Additionally, reliability assessed through Cronbach's Alpha is optimal (25).

**Covariables**

Additional collected information included demographic data such as age, sex, marital status, geographical area, medical position, specialties, years of medical practice, working hours per shift, primary shift schedule, duration of assistance during COVID-19, and current work regions in Peru. According to the literature, we identified key confounding variables, including sex, age, years of medical practice, and medical positions. These variables have been shown to influence the outcomes of interest (Psychological WPV and BS) potentially and were therefore carefully considered in our analysis (Supplementary Material 4).

**Statistical analyses**

The baseline characteristics of the study population were tabulated overall (Table 1). To describe the data, we used percentages for categorical variables and medians and interquartile ranges for continuous variables. For assessing the normality of quantitative variables, we employed the Shapiro–Wilk test.

Psychological violence was assessed as a binary variable, categorized as high (> 26 points) and low (< 26 points), and described using percentages. Burnout, the independent variable, was also evaluated in two categories (high and low). This data is presented in Table 2.

Poisson regression models with robust variance were used to analyze the association between psychological violence and burnout (26,27). Table 3 addresses our main objective, where we evaluate the crude association between these variables, adjusting for the variable "medical positions," which was identified as a risk factor for psychological violence.

For our final objective (Table 4), we adopted an exploratory approach to identify risk factors associated with psychological violence in the entire sample. Similar Poisson regression models were employed, adjusting for variables with a $p < 0.10$ in the unadjusted estimates, including medical positions. We calculated 95% confidence intervals, considering p-values < 0.05 as statistically significant. All analyses were performed using Stata 16.1 for Windows (Stata Corporation, College Station, Texas).

## IV. RESULTS

### Characteristics of study participants

Between April to December 2023, we conducted a survey involving 384 physicians, after excluding 4 participants based on the inclusion and exclusion criteria. The median age of participants was 37 years (interquartile range: 30–49 years). The respondents included a slightly higher proportion of men (52%) than women, with the majority (88%) residing in urban areas of Peru. Regarding professional characteristics, almost half (47.9%) were specialists or subspecialists, and a significant number (44.6%) worked in medicine service. On average, participants had 10 years of professional experience (interquartile range: 4–20.5 years) and typically worked shifts exceeding 12 h (Table 1).

### Psychological violence, burnout and risk factors

Regarding the key variables, burnout was prevalent among 54.7% of physicians, while 24.5% reported experiencing psychological violence (Table 2). Physicians with high burnout were 4.04 times more likely to experience psychological violence compared to those with low burnout (95% CI: 2.45–6.66). This association remained significant even after adjusting for confounding variables, sex, age, years of Medical Practice, and medical positions (PR: 3.93; 95% CI: 2.35–6.57) (Table 3). Among the risk factors for psychological violence, being a resident practitioner was identified as a significant risk factor (PR: 1.79; 95% CI: 1.18–2.73) (Table 4).

## V. DISCUSSION

This is the first study in Latin America to examine the association between burnout levels and psychological workplace violence among Peruvian physicians, along with its associated factors. Our findings indicate that physicians experiencing burnout had a 4.04-fold increase in experiencing psychological violence. The only significant risk factor identified was being a resident practitioner.

We found that nearly half of Peruvian doctors reported experiencing high burnout syndrome levels. This finding contrasts with a 2021 meta-analysis, which reported a prevalence of 24.5% across 78 studies from countries in the Eastern Mediterranean Region (28), and a 2024 systematic review that revealed a prevalence of 24% across 46 studies conducted in Spain (29). The discrepancy may be attributed to the demanding schedules, lower salaries compared to other countries, and inconsistencies in salary structures across institutions and contract types faced by most Peruvian doctors. These conditions often result in overtime work or multiple job commitments, negatively impacting doctors' health and quality of life (30). Additionally, the high burnout prevalence may reflect non-differential misclassification bias, as self-reported surveys can lead to overdiagnosis from miscategorization of mental health status. Therefore, employing standardized diagnostic criteria, such as the MBI-HSS, is essential to mitigate this risk in future research.

In our study, 24.5% of participants reported experiencing high levels of psychological WPV. Similarly, a 2019 meta-analysis reported an overall prevalence of 69% for WPV, including both patient-to-worker and worker-to-worker instances (31). In Latin America, studies have examined the prevalence of WPV among colleagues, with reported rates ranging from 9% to 98.5% (32–36). The variability in these results could be attributed to the sensitivity of the tools employed to examine the phenomena. Our analysis found that the categories of isolation and intimidation violence had the highest scores. This is consistent with a longitudinal study of 260 resident physicians in Mexico, which indicated that while overt intimidation and workplace denigration were the most common forms of harassment, communication blockages also emerged as a significant concern (34). Intimidation may be viewed as a successful teaching or motivational technique, developing a culture of tolerance for it (37), particularly within the competitive and hierarchical structure of the healthcare sector. Within this context, isolation violence can also manifest as superiors exclude or undermine junior staff, further perpetuating psychological violence.

Our results revealed that physicians experiencing burnout had a higher prevalence of psychological WPV compared to those without burnout; even after adjusting for age, sex, medical positions and years of medical practice, this association remained significant. This finding aligns with a 2021 systematic

review, which analyzed 72 observational studies and found a substantial correlation between burnout symptoms and workplace violence among nurses and physicians (16). Moreover, coworkers were identified as the causal agents of WPV in only 15.2% of the included studies, with verbal violence being the predominant type across all studies. Additionally, a recent network study conducted among 1,981 training physicians identified significant correlations and dependencies between worker-to-worker WPV, burnout syndrome, depressive symptoms, and thoughts of quitting (19).

The relationship between burnout syndrome and workplace violence is multifaceted and reciprocal, often arising from shared conditions such as toxic work environments and heavy workloads (38). Physicians experiencing burnout typically exhibit reduced emotional resilience, leading to frustration, hopelessness, and exhaustion, which can contribute to mental health issues (38). Burnout can also impair cognitive function and decision-making abilities, increasing the likelihood of medical errors (39). These errors may, in turn, escalate the risk of aggressive responses in the workplace, particularly from superior colleagues who use inadequate teaching methods. The consequences of burnout extend beyond personal well-being, as it is associated with decreased job satisfaction and increased turnover intentions, fostering a climate of detachment and conflict within the workplace (5). These factors collectively heighten the risk of WPV.

Female gender, urban practice areas and shifts longer than 12 h appeared to be risk factors, though none reached statistical significance. The only statistically significant risk factor identified was being a resident practitioner. Previous reports among surgical residents have highlighted high prevalence rates of bullying, discrimination, harassment, and sexual harassment (40), which may stem from the increased vulnerability residents face due to the steep learning curve and hierarchical structure within hospital environments. Extended working hours have been linked to heightened risk of non-physical workplace violence against healthcare workers, attributed to fatigue, reduced staffing levels, isolation, and elevated stress among employees, as noted in a 2019 systematic review (41). However, it is worth mentioning that this study did not specify whether WPV stemmed from interactions with patients/visitors or colleagues.

Numerous primary studies support the notion that females are more susceptible to encountering internal WPV compared to males (42,43). This could be attributed to entrenched gender stereotypes portraying women as nurturing and passive, especially in countries like Peru with high rates of gender-based violence, as well as power dynamics wherein women face hostility or undermining behavior in male-dominated environments. Furthermore, although our research shows a higher prevalence of violence in urban settings, existing evidence from higher-income countries suggests that working in rural or remote areas is associated with internal aggression (42). This disparity may arise from

unique challenges in Peruvian urban healthcare environments, including high patient loads (12), increased demand for care, and competition that heightens the risk of WPV. Therefore, work location should be a key consideration in preventing workplace aggression.

The results hold promise for extrapolation to similar populations; however, it's crucial to analyze each specific context to prevent the emergence of a public health issue. Besides, our findings underscore the vulnerability doctors face and the impact of hierarchical structures within their teams.

**Limitations and strengths**

Certain limitations must be mentioned. Our sample was not entirely representative of the physician population in Peru, as nearly three-quarters predominantly work in the Coast region. This may lead to potential differences in the results of variables of interest among physicians practicing in other regions. Because the survey was conducted online, only physicians with internet access were able to participate, potentially introducing a selection bias. Doctors experiencing WPV may be more likely to report burnout symptoms due to the emotional impact, and vice versa, introducing potential misclassification bias. Furthermore, the absence of participant supervision during survey completion may have impacted the accuracy of our findings. Another limitation is the tool (SPV-Health) used to assess psychological WPV, which, although validated in a Peruvian population, lacks detailed data on the

sensitivity and specificity of its short version utilized in this study (22). Additionally, the absence of a variable accounting for the number of patients seen during consultation hours poses a constraint. Due to the small sample size, we recommend interpreting findings related to risk factors with caution.

Finally, it is important to note that our study assessed only psychological violence, the most prevalent type, with a focus on coworker-perpetrated violence, despite patient-related violence being more common (44). This may underestimate the relationship between WPV and BS, as patient-related violence directly impacts healthcare workers' mental health and job performance.

Regarding the strengths, our study is the first in Latin America to explore the relationship between BS and psychological WPV from colleagues among physicians, paving the way for future research. Additionally, it is the first to employ a specialized tool (SPV-Health) to identify the different types of psychological violence experienced.

## VI. CONCLUSION

Our study identified a robust association between BS among Peruvian doctors and their perception of being victims of psychological WPV from colleagues. While this finding supports existing research, it emphasizes the necessity for tailored interventions to deal with the challenges encountered by Peruvian

doctors. Implementing comprehensive strategies that prioritize communication, foster a supportive environment, and cultivate engaged and strong leadership within healthcare teams is crucial for effectively mitigating the impact of this issue.

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## VIII. TABLES AND FIGURES

**Table 1. Characteristics of the study participants (n = 384)**

| Characteristics | n (%) |
|---|---|
| Age (years), median (IQR) | 37.0 (30-49) |
| Age | |
| Less than 30 years | 90 (23.5) |
| 30 to 40 years | 123 (32.1) |
| 40 to 50 years | 75 (19.6) |
| More than 50 years | 95 (24.8) |
| Sex | |
| Female | 184 (47.9) |
| Male | 200 (52.1) |
| Marital status | |
| Single | 178 (46.4) |
| Married | 145 (37.8) |
| Cohabiting | 51 (13.3) |
| Widowed/Divorced | 10 (2.6) |
| Area | |
| Urban | 338 (88.0) |
| Rural | 46 (12.0) |
| Medical Positions | |
| General Practitioner | 140 (36.5) |
| Resident Practitioner | 60 (15.6) |
| Specialist or Subspecialist Practitioner | 184 (47.9) |
| Medical Specialties | |
| Medicine | 169 (44.6) |
| Surgery | 43 (11.4) |
| Pediatrics | 55 (14.5) |
| Gynecology/Obstetrics | 6 (1.6) |
| Psychiatry | 8 (2.1) |
| Emergency | 64 (16.9) |
| Intensive Care Unit (ICU) | 12 (3.2) |
| Radiology | 6 (1.6) |
| Others | 4 (1.0) |
| General | 12 (3.1) |
| Years of Medical Practice, median (IQR) | 10.0 (4-20.5) |
| Work Hours per Shift | |
| Less than or equal to 12 hours | 91 (23.7) |
| More than 12 hours or Extended hours | 292 (76.3) |

| | |
|---|---|
| Primary Shift Schedule | |
| In the morning | 198 (51.6) |
| In the afternoon | 16 (4.2) |
| At night | 10 (2.6) |
| Occur at any time without preference | 160 (41.7) |
| Assistance Duration (Months) during COVID-19, mean ± SD | 18.2 ± 12.3 |
| Current Work Geographical Regions in Peru | |
| Coast | 280 (73.5) |
| Andes | 26 (6.8) |
| Jungle | 75 (19.7) |

Abbreviations: SD, standard deviation; IQR, interquartile range; n (%), number and percent.

**Table 2. Burnout syndrome and psychological violence in the study population**

| Characteristics | n (%) |
|---|---|
| Burnout | |
| Low | 174 (45.3) |
| High | 210 (54.7) |
| Emotional exhaustion dimension | |
| Low | 147 (38.3) |
| Moderate | 68 (17.7) |
| High | 169 (44.0) |
| Depersonalization dimension | |
| Low | 212 (55.2) |
| Moderate | 56 (14.6) |
| High | 116 (30.2) |
| Personal Accomplishment dimension | |
| Low | 92 (24.0) |
| Moderate | 82 (21.3) |
| High | 210 (54.7) |
| Psychological Violence | |
| Low ≤ 26 points | 290 (75.5) |
| High ≥ 27 points | 94 (24.5) |
| Intimidation Violence dimension | |
| Low | 269 (70.1) |
| High | 115 (29.9) |
| Isolation Violence dimension | |
| Low | 253 (65.9) |
| High | 131 (34.1) |
| Discrediting Violence dimension | |
| Low | 306 (79.7) |
| High | 78 (20.3) |

Abbreviations: n (%), number and percent.

**Table 3. Psychological violence among present and absence of Burnout**

| Burnout | n | Unadjusted estimate | | Adjusted model* | |
|---|---|---|---|---|---|
| | | PR (95% CI) | p-value | PR (95% CI) | p-value |
| Absent | 174 | reference | | reference | |
| Present | 210 | 4.04 (2.45 – 6.66) | <0.001 | 3.93 (2.35 - 6.57) | <0.001 |

Abbreviations: PR, Prevalence ratio; CI, Confidence interval.
*Adjusted for sex, age (years), years of Medical Practice and medical positions

**Table 4. Risk factors associated with psychological violence**

| Variables | Unadjusted estimate | Adjusted estimate |
|---|---|---|
| | PR (95% CI) | PR (95% CI) |
| Age | 0.99 (0.97 - 1.01) | - |
| Sex male | 0.71 (0.49 – 1.01) | 0.75 (0.53 – 1.07) |
| Area | | |
| Rural | Ref. | |
| Urban | 1.03 (0.59 – 1.78) | - |
| Medical Positions | | |
| General Practitioner | Ref. | Ref. |
| Resident Practitioner | 1.83 (1.21 – 2.78) | 1.79 (1.18 – 2.73) |
| Specialist or Subspecialist Practitioner | 0.80 (0.53 - 1.23) | 0.81 (0.53 – 1.24) |
| Years of Medical Practice | 0.98 (0.99 - 1.01) | - |
| Work Hours per shift | | |
| Less than or equal to 12 h | Ref. | |
| More than 12 h or Extended hours | 1.31 (0.83 – 2.08) | - |
| Assistance Duration (Months) during COVID-19 | 1.00 (0.99 - 1.02) | - |

Abbreviations: PR, Prevalence ratio; CI, Confidence interval.

# IX. SUPPLEMENTARY MATERIAL

## 1. STROBE Statement—Checklist of items that should be included in reports of cross-sectional studies

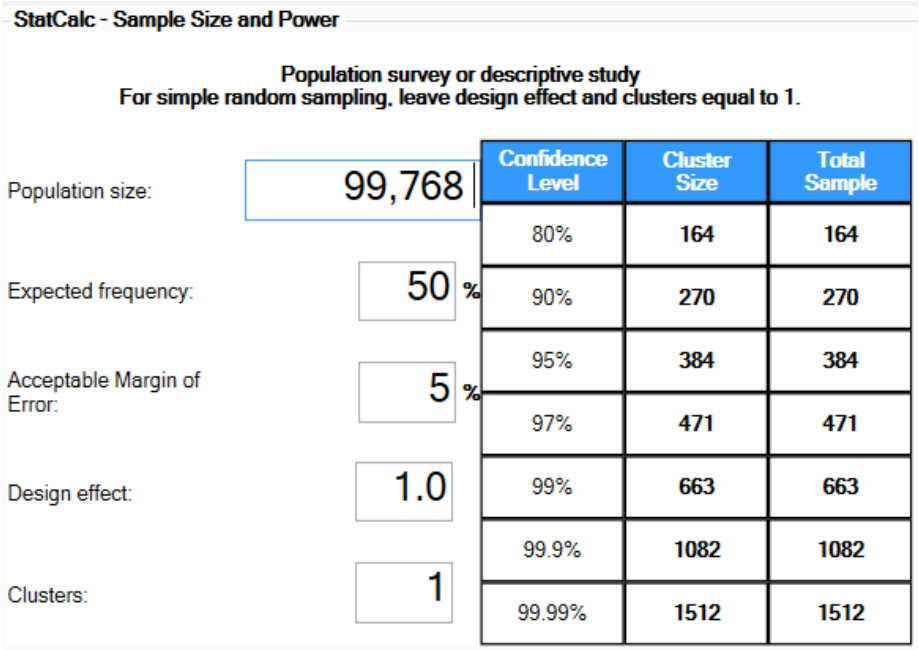
| Item No | | Recommendation | check |
|---|---|---|---|
| **Title and abstract** | 1 | (*a*) Indicate the study's design with a commonly used term in the title or the abstract | ✓ |
| | | (*b*) Provide in the abstract an informative and balanced summary of what was done and what was found | ✓ |
| **Introduction** | | | |
| Background/rationale | 2 | Explain the scientific background and rationale for the investigation being reported | ✓ |
| Objectives | 3 | State specific objectives, including any prespecified hypotheses | ✓ |
| **Methods** | | | |
| Study design | 4 | Present key elements of study design early in the paper | ✓ |
| Setting | 5 | Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection | ✓ |
| Participants | 6 | (*a*) Give the eligibility criteria, and the sources and methods of selection of participants | ✓ |
| Variables | 7 | Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable | ✓ |
| Data sources/ measurement | 8* | For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group | |
| Bias | 9 | Describe any efforts to address potential sources of bias | ✓ |
| Study size | 10 | Explain how the study size was arrived at | ✓ |
| Quantitative variables | 11 | Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why | |
| Statistical methods | 12 | (*a*) Describe all statistical methods, including those used to control for confounding | ✓ |
| | | (*b*) Describe any methods used to examine subgroups and interactions | |
| | | (*c*) Explain how missing data were addressed | |
| | | (*d*) If applicable, describe analytical methods taking account of sampling strategy | |
| | | (*e*) Describe any sensitivity analyses | |
| **Results** | | | |
| Participants | 13* | (a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analyzed | ✓ |
| | | (b) Give reasons for non-participation at each stage | ✓ |

| | | | |
|---|---|---|---|
| | | (c) Consider use of a flow diagram | |
| Descriptive data | 14* | (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders | ✓ |
| | | (b) Indicate number of participants with missing data for each variable of interest | |
| Outcome data | 15* | Report numbers of outcome events or summary measures | |
| Main results | 16 | (*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included | ✓ |
| | | (*b*) Report category boundaries when continuous variables were categorized | ✓ |
| | | (*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period | |
| Other analyses | 17 | Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses | ✓ |
| **Discussion** | | | |
| Key results | 18 | Summarize key results with reference to study objectives | ✓ |
| Limitations | 19 | Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias | ✓ |
| Interpretation | 20 | Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence | ✓ |
| Generalisability | 21 | Discuss the generalisability (external validity) of the study results | ✓ |
| **Other information** | | | |
| Funding | 22 | Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based | ✓ |

*Give information separately for exposed and unexposed groups.

**Note:** An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

**Supplementary material 2. Sample size calculation**




Sample size calculated using Epi Info program: 384
Potential losses: 10% (384): 38.4
Final sample size calculation: 384 + 38.4 = 422

**Supplementary material 3.** English language version of the survey

We invite you to participate in a study that aims to determine the influence of burnout syndrome as a factor associated with psychological violence among physicians. This study is conducted by researchers from Universidad Peruana Unión, Universidad Privada Antenor Orrego, and Universidad Peruana Cayetano Heredia.

We ask that you carefully read each statement and respond honestly. If you have any questions, you can contact the principal investigators at the email: [redacted].

The risks of this study are minimal. Some questions may cause discomfort; if this occurs, you are free to choose whether or not to answer them. The study will have no cost and will not provide compensation for participants. We will keep your information confidential; however, only the researchers will have access to the databases. You will not be asked for your name, so the survey is anonymous. Furthermore, if the results of this research are published, no information that could identify you will be disclosed.

We appreciate your participation in the study.

"I voluntarily agree to participate in this study. I understand the activities I will participate in if I decide to join the study, and I also understand that I can choose not to participate and can withdraw from the study at any time. Do you agree to proceed with this study?"

a. Yes
b. No

"We appreciate your willingness to participate in our study. This survey is intended for Peruvian doctors who have had an active employment contract in our country in the last 6 months and primarily practice medicine in clinical settings."

c. Yes
c. No

**SECTION 1: BIO-SOCIO DEMOGRAPHIC DATA**

1. Age (years)
[Your answer here]

2. Marital Status
a. Cohabiting
b. Divorced
c. Married
d. Separated
e. Widowed

f. Single

3. Sex
a. Female
b. Male

4. What is the department where you currently work?
[Your answer here]

5. What is your actual job position?
a. Resident
b. Specialist
c. General Practitioner
d. Subspecialist

6. Work schedule conditions (you can select more than one answer)
a. Morning shift
b. Night shift
c. Afternoon shift
d. Occur at any time without preference

7. In the last 6 months, in which area have you worked?
a. Emergency
b. Pediatrics
c. ICU
d. Surgery
e. Medicine
f. Gynecology
g. Others

8. How many years have you been working as a doctor?
[Your answer here]

9. How many hours do you regularly work per day?
[Your answer here]

10. How long did you work as an assistant doctor during the COVID-19 pandemic (in months)?
[Your answer here]

11. Type of work area where you currently work
a. Urban
b. Rural

**SECTION 2: BURNOUT SYNDROME**

“To assess Burnout Syndrome, the Maslach Burnout Inventory (MBI) will be used. This instrument consists of 22 items divided into three dimensions: emotional exhaustion, depersonalization, and personal accomplishment. Please respond to each item by selecting the option that indicates how frequently you experience the statement."

I feel emotionally drained by my work.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

Working with people all day long requires a great deal of effort.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I feel like my work is breaking me down.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I feel frustrated by my work.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week

- 6 Every Day

I feel I work too hard at my job.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

It stresses me too much to work in direct contact with people.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I feel like I'm at the end of my rope.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I feel I look after certain patients impersonally, as if they are objects.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I feel tired when I get up in the morning and have to face another day at work.

- 0 Never
- 1 A Few Times per Year

- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I have the impression that my patients make me responsible for some of their problems.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I am at the end of my patience at the end of my work day.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I really don't care about what happens to some of my patients.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I have become more insensitive to people since I've been working.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I'm afraid that this job is making me uncaring.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I accomplish many worthwhile things in this job.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I feel full of energy.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I am easily able to understand what my patients feel.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I look after my patients' problems very effectively.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month

- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

In my work, I handle emotional problems very calmly.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

Through my work, I feel that I have a positive influence on people.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I am easily able to create a relaxed atmosphere with my patients.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

I feel refreshed when I have been close to my patients at work.

- 0 Never
- 1 A Few Times per Year
- 2 Once a Month
- 3 A Few Times per Month
- 4 Once a Week
- 5 A Few Times per Week
- 6 Every Day

**SECTION 3: PSYCHOLOGICAL VIOLENCE**

"To assess the variable of psychological violence, the Short Scale for Assessing Psychological Violence in Healthcare Professionals (EVP-health) will be used, previously validated in the Peruvian context. This instrument consists of 13 items. Please respond to each statement with the option that indicates how frequently you experience it."

During the last 6 months, have you experienced the following:

1. You have been denied access to important information.
   - a. Never
   - b. Sometimes
   - c. Majority of times
   - d. Always

2. You have been accused of negligence (manipulated).
   - a. Never
   - b. Sometimes
   - c. Majority of times
   - d. Always

3. Your professional successes have been ignored.
   - a. Never
   - b. Sometimes
   - c. Majority of times
   - d. Always

4. Your work has been undervalued.
   - a. Never
   - b. Sometimes
   - c. Majority of times
   - d. Always

5. You have been excluded from meetings where important decisions are made.
   - a. Never
   - b. Sometimes
   - c. Majority of times
   - d. Always

6. Your presence has been ignored.
   - a. Never
   - b. Sometimes
   - c. Majority of times
   - d. Always

7. You have been assigned tasks with very short deadlines.
- a. Never
- b. Sometimes
- c. Majority of times
- d. Always

8. Malicious rumors have been spread about you.
- a. Never
- b. Sometimes
- c. Majority of times
- d. Always

9. Opportunities for training or development have been blocked.
- a. Never
- b. Sometimes
- c. Majority of times
- d. Always

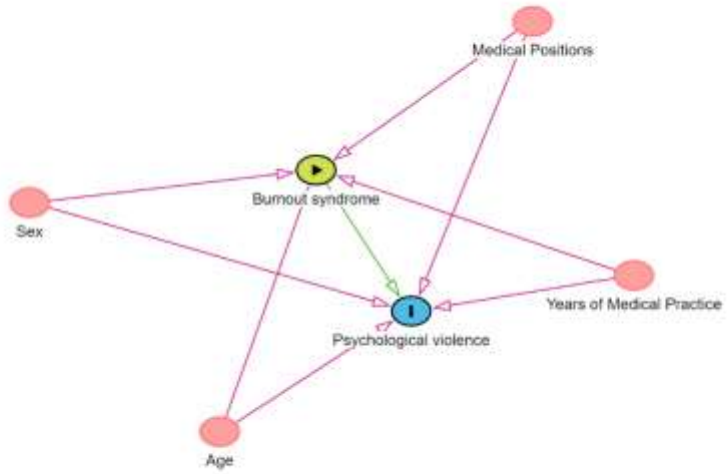
10. You have been prevented from expressing yourself.
- a. Never
- b. Sometimes
- c. Majority of times
- d. Always

11. You have been sanctioned for minor faults.
- a. Never
- b. Sometimes
- c. Majority of times
- d. Always

12. You have been rejected by avoiding eye contact and through gestures of disdain.
- a. Never
- b. Sometimes
- c. Majority of times
- d. Always

13. Your work has been criticized and you have been verbally attacked.
- a. Never
- b. Sometimes
- c. Majority of times
- d. Always

**Supplementary material 4. A directed acyclic graph representing the relationship between BS, WPV, and covariables. References are provided in the table.**




| Variable | Burnout syndrome | Psychological violence |
|---|---|---|
| Age | OR: 3,44; IC 95%, 1.15-10.33, p:0.01 (a) | OR: 0.38; IC 95% 0.189-0.762, p 0.0064 (e) |
| Sex | OR: 1,34; IC 95%, 1,20-1,50 (b) | Although the study did not report statistically significant differences in the prevalence of harassment, intimidation, and discrimination by gender, there were gender differences in the types of violence. (f) |
| Medical Positions | RP: 35.1%, 95% CI: 26.8% - 43.5%, p<0.001 (c) | The study reports that 98.5% of residents reported experiencing harassment. (g) |
| Years of Medical Practice | OR, 2,57; IC del 95 %, 1,63-4,12 (d) | OR: 2.866; IC 95% 1.379-5.959, p 0.0048 (e) |

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