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Burnout syndrome among doctoral students

Síndrome de burnout en estudiantes de doctorado

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Abstract

This study aims to assess the dimensions of burnout syndrome among doctoral students in Health Sciences. A descriptive-correlational study was conducted with a sample of 410 health professionals in Puno (physicians, psychologists, and nurses) enrolled in a doctoral program in Health Sciences, with a mean age of 40 years (SD = 5.2). The adapted version of the Maslach Burnout Inventory, validated in Peruvian contexts with high reliability (Cronbach's α = 0.89), was used. The study design was correlational. The results show a strong interconnection among the dimensions of burnout, with emotional exhaustion and depersonalization as allied factors (ρ = 0.662; p < 0.01). These findings confirm a significant positive correlation between emotional exhaustion and depersonalization, a moderate inverse correlation between emotional exhaustion and personal fulfillment, and a strong inverse correlation between personal fulfillment and depersonalization among healthcare professionals.

Keywords: Burnout, emotional exhaustion, depersonalization.

Resumen

Esta investigación busca evaluar las dimensiones del síndrome de burnout en estudiantes de doctorado en Ciencias de la Salud. Se realizó un estudio descriptivo-correlacional con una muestra de 410 profesionales de la salud en Puno (médicos, psicólogos y enfermeras) inscritos en un programa de

doctorado en Ciencias de la Salud, con edad media de 40 años (DE=5,2). Se empleó la versión adaptada del Inventario de Burnout de Maslach, validada en contextos peruanos con alta confiabilidad (α de Cronbach = 0,89). El diseño fue correlacional. Los resultados muestran una fuerte interconexión entre las dimensiones del burnout, con el agotamiento emocional y la despersonalización como factores aliados (ρ=0,662; p<0,01). Estos hallazgos confirman una correlación positiva significativa entre agotamiento emocional y despersonalización, una correlación inversa moderada entre agotamiento emocional y realización personal, y una correlación inversa fuerte entre realización personal y despersonalización en profesionales de la salud.

Palabras clave: Burnout, agotamiento emocional, despersonalización.

Introduction

At the international level, burnout syndrome among healthcare professionals has reached pandemic proportions, a crisis further exacerbated by the COVID-19 pandemic, with global meta-analyses reporting prevalence rates ranging from 30% to 50% (Abbondanza & White, 2024; An & Tao, 2024; Astolfi et al., 2020). Research from the World Health Organization (WHO, 2025) highlights that this condition intensified during the pandemic, as factors such as excessive workloads, fear of infection, and resource shortages drove rates up to 52% among frontline staff, particularly nurses and physicians (Astolfi et al., 2020).

In Europe and North America, systematic reviews have documented post-pandemic figures exceeding 40% (Mendoza, 2018; Merino-Plaza et al., 2018), while similar patterns have emerged across Latin America, including Peru (Chui-Betancur et al., 2023; Mendoza, 2018), with prevalences between 35% and 45%. This burnout epidemic not only severely compromises workers' mental health, manifesting as emotional exhaustion, depersonalization, and diminished personal accomplishment, but also carries profound consequences for quality of care, reducing empathy, increasing clinical errors, and raising the incidence of adverse patient events. Moreover, it accelerates the turnover of qualified human talent, with attrition rates that can exceed 20–30% in sectors such as healthcare and education, according to recent systematic reviews.

This dynamic calls for urgent, coordinated global interventions, including organizational prevention policies, evidence-based resilience programs, and regulatory frameworks that prioritize occupational well-being as a pillar of sustainable development (Huarcaya et al., 2023; Mason, 2023). In developed countries such as the United States and much of Western Europe, prospective longitudinal studies, including those using the Maslach Burnout Inventory (MBI) and cohorts from the Nurses' Health Study, have demonstrated that emotional exhaustion functions as a sequential precursor to depersonalization and reduced personal accomplishment, forming a pathogenic continuum that correlates with turnover rates of 20–30% in high-human-contact professions such as nursing and teaching (Baldeón et al., 2023; Guimarães et al., 2024; Merino-Plaza et al., 2018; Ozamiz-Etxebarria et al., 2023).

Consider the healthcare professionals who shoulder exhausting shifts exceeding 50 hours per week, a reality affecting over 40% of them, according to WHO estimates, while simultaneously coping with chronic staffing shortages as colleagues retire prematurely or emigrate in search of relief. Added to this are ethically painful dilemmas, such as deciding who receives a ventilator or how to accompany a patient through their final moments.

In middle- and low-income settings, as observed across Latin America and Asia, burnout syndrome takes on particularly critical dimensions. This severity stems from the combination of limited structural resources and adverse socioeconomic conditions, including precarious employment in sectors such as education (Glaría et al., 2016; Rodríguez, 2014; Wang et al., 2024). Comparatively, low personal accomplishment correlates inversely with emotional exhaustion and depersonalization, revealing structural deficiencies in organizational climate. Whereas the first two dimensions reflect reactive wear-and-tear in response to excessive demands, diminished personal accomplishment signals a proactive disengagement

from work, characterized by feelings of ineffectiveness and chronic dissatisfaction (Misad et al., 2022; Pérez-Guevara & Suárez, 2022; Primo et al., 2022), generating absenteeism and professional emigration that widen the primary care gap. This global dynamic demands transnational interventions, such as those recommended by the WHO, integrating resilience and well-being policies to mitigate impacts on public health.

In the Peruvian context, burnout syndrome has become a silent epidemic disproportionately affecting healthcare professionals, teachers, and public-sector workers, exacerbated by the lingering effects of the COVID-19 pandemic and chronic economic instability (Abbondanza & White, 2024; Liao et al., 2022; Sobczuk et al., 2024). Contributing factors include extreme workloads, with shifts frequently exceeding 50 hours per week, inadequate salaries that barely cover basic household needs, and a lack of emotional support in hostile work environments such as overwhelmed hospitals or overcrowded classrooms, all of which generate profound physical and mental exhaustion (Mason, 2023; Phillips et al., 2022; Taylor et al., 2022; Yao et al., 2023). According to 2023 data from the Ministry of Health (Minsa), 45% of Peruvian physicians report burnout symptoms, while a study from Universidad Peruana Cayetano Heredia reveals that in regions such as Puno and Cusco, 60% of rural teachers experience chronic fatigue due to institutional precarity and geographic isolation (Taylor et al., 2022).

The consequences of burnout are devastating at the individual, organizational, and societal levels, creating a cycle that deepens structural inequities in countries like Peru. At the individual level, they manifest as serious mental health disorders, including clinical depression (prevalence of 40–50% among those affected, according to WHO, 2023), chronic anxiety, somatization, and addictive behaviors, culminating in premature workforce departure. In Peru's healthcare sector, the Colegio Médico del Perú (2024) reports annual turnover rates of 25–30% among physicians and nurses, figures that climb to 35% in Andean regions such as Puno due to post-pandemic overload (MINSA, 2022; Minsa, 2025, 2024).

In the Puno context, burnout strikes with particular force among teachers and healthcare personnel in the high Andean altitudes, where extreme elevation, harsh cold, and geographic isolation compound already formidable workloads, classrooms with up to 50 students per teacher and hospital shifts without relief (Chui-Betancur et al., 2023). Against this backdrop, the purpose of this study was to assess the dimensions of burnout syndrome among doctoral students in Health Sciences.

Methodology

This descriptive-correlational study was conducted with a sample of 410 healthcare professionals in Puno, physicians, psychologists, and nurses, all enrolled in a doctoral program in Health Sciences, with a mean age of 40 years (SD = 5.2). These participants, drawn primarily from public hospitals in Juliaca and rural health centers, face burnout on a daily basis due to workload pressures in high-altitude, resource-constrained settings; 55% were women, 60% were physician specialists in internal medicine and emergency care, 25% were clinical psychologists, and 15% were supervising nurses.

Selection was non-probabilistic and convenience-based, ensuring a minimum of 5 years of professional experience, which allowed for the exploration of correlations between occupational exhaustion and variables such as weekly hours worked (average 55 hours) within a design that describes prevalence and statistical relationships without experimental manipulation.

The adapted Peruvian version of the Maslach Burnout Inventory was employed, an instrument validated in Peruvian contexts with high reliability (Cronbach's $\alpha = 0.89$), comprising 22 Likert-type items ranging from 0 (never) to 6 (always). It evaluates three key dimensions: emotional exhaustion (9 items, measuring psychological fatigue); depersonalization (5 items, reflecting cynical attitudes); and low personal accomplishment (8 items, assessing reduced self-efficacy). Scores are categorized as low, medium, or high risk, enabling a multidimensional diagnosis of burnout adapted to Puno-based professionals.

Data processing was carried out using JASP version 0.95, an open-source software platform for Bayesian and frequentist analysis well suited to descriptive-correlational designs due to its intuitive interface and robust visualization capabilities. Descriptive statistics (means, SD) and normality tests (Shapiro-Wilk)

were calculated, and Spearman's non-parametric correlation (ρ) was selected given the non-normal distributions, with a significance level of $\alpha < 0.05$ for rejecting the null hypothesis. Results showed significant moderate correlations, such as $\rho = 0.42$ ($p = 0.001$) between emotional exhaustion and working hours, with scatterplots and 95% confidence intervals confirming associations within the Puno context without assuming Gaussian linearity.

Results

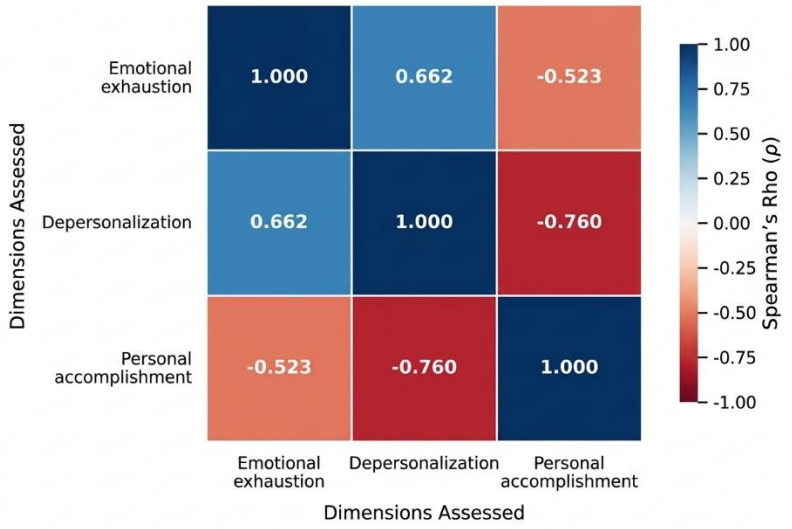
The findings identify how the principal dimensions of burnout syndrome relate to one another among doctoral students in Health Sciences. To this end, associations among emotional exhaustion, depersonalization, and personal accomplishment were analyzed using Spearman's correlation coefficient, consistent with the nature of the data and the correlational purpose of the study. Table 1 presents the correlation values and statistical significance between these dimensions, facilitating observation of both the direction and intensity of the relationships identified. This information provides the basis for interpreting how emotional wear-and-tear, distancing attitudes, and perceptions of personal achievement interact within the participants' academic and professional experience.

Table 1. *Correlations among emotional exhaustion, depersonalization, and personal accomplishment*

Variable	Emotional Exhaustion	Depersonalization	Personal Accomplishment
Emotional Exhaustion	—	—	—
Depersonalization	ρ = 0.662; p < .001	—	—
Personal Accomplishment	ρ = -0.523; p = .002	ρ = -0.760; p < .001	—

As a visual complement to Table 1, Figure 1 synthesizes the direction and magnitude of the associations among burnout dimensions. This representation facilitates immediate identification that emotional exhaustion relates positively to depersonalization, while personal accomplishment maintains inverse associations with both exhaustion dimensions.

Figure 1. *Heatmap of correlations among burnout dimensions*



Note. The heatmap reveals that the strongest inverse association occurs between personal accomplishment and depersonalization (ρ = -0.760), while the most prominent positive relationship is observed between emotional exhaustion and depersonalization (ρ = 0.662).

The results demonstrate statistically significant associations among all three dimensions of burnout syndrome evaluated among doctoral students in Health Sciences. Taken together, the obtained correlations indicate that burnout does not manifest as an isolated phenomenon or one confined to a single expression of distress, but rather as an integrated process in which emotional exhaustion, depersonalization, and personal accomplishment relate to one another in a consistent manner. This interpretation proves especially relevant in a population that, in addition to meeting the academic demands inherent to doctoral training, maintains professional responsibilities in the healthcare field, where clinical pressure, complex decision-making, and frequent encounters with human suffering are part of daily experience.

The positive correlation between emotional exhaustion and depersonalization was strong and statistically significant ($\rho = 0.662$; $p < .001$). This finding indicates that as the sense of emotional fatigue increases, so too does the tendency toward distancing, coldness, or disconnection from individuals with whom one interacts in both work and academic settings. In practical terms, this result suggests that accumulated exhaustion affects not only the student's internal state but also the quality of their engagement with patients, colleagues, faculty, advisors, and fellow students. When emotional energy declines persistently, individuals may begin to protect themselves through less empathic, more automatic, or more impersonal responses, not necessarily from a lack of vocation, but as a coping mechanism in the face of demands that exceed their available resources.

This link between emotional exhaustion and depersonalization offers a deeper understanding of the doctoral students' experience in health sciences, who often navigate multiple high-stakes environments. On one hand, they face the responsibilities of clinical practice, frequently in services with heavy workloads and limited resources. On the other hand, they must fulfill academic activities, produce scientific work, advance their dissertations, engage in specialized reading, and participate in research spaces. The convergence of these demands can generate a progressive sense of saturation. In this context, depersonalization emerges as a warning signal, indicating that exhaustion has moved beyond physical or mental fatigue and begun to alter the quality of human contact and affective disposition toward others.

Furthermore, the magnitude of the correlation found supports the view that emotional exhaustion constitutes a central dimension for understanding the behavior of other burnout manifestations. The value of $\rho = 0.662$ reflects a sufficiently robust relationship to consider that increased emotional fatigue is frequently accompanied by a heightened risk of depersonalized responses. This does not imply a direct causal relationship, given the correlational design of the study, but it does reveal a clear trend within the analyzed sample. Consequently, participants with higher exhaustion levels may face greater difficulty maintaining a close, receptive, and sensitive stance toward the human demands of their profession and doctoral training.

Regarding personal accomplishment, the results show a moderate inverse correlation with emotional exhaustion ($\rho = -0.523$; $p = .002$). This finding reveals that when students perceive lower efficacy, less achievement, or reduced satisfaction with their performance, they tend to report higher levels of emotional exhaustion. Conversely, those who maintain a more favorable perception of their abilities and progress appear to experience less fatigue. This result is important because it shifts the focus from an exclusively negative understanding of burnout toward a broader reading in which protective factors also play a decisive role. Personal accomplishment is not limited to feeling satisfied with one's work; it represents the possibility of recognizing that effort has meaning, produces results, and strengthens professional identity.

For doctoral students, personal accomplishment carries particular significance. Progress on a dissertation, publication of an article, successful course completion, involvement in research, or recognition from advisors and colleagues can become sources of motivation that buffer against fatigue. However, when these achievements go unnoticed or when the doctoral process feels slow, solitary, or poorly supported, the sense of ineffectiveness may intensify exhaustion. The observed negative correlation thus suggests

that the perception of academic and professional achievement may function as a relevant psychological resource in the face of environmental demands.

The most robust relationship emerged between personal accomplishment and depersonalization, with a strong and significant inverse correlation ($\rho = -0.760$; $p < .001$). This finding constitutes one of the most relevant results of the study, indicating that lower personal accomplishment is strongly associated with higher levels of depersonalization. In other words, when participants feel that their work or training does not allow them to develop, contribute, or achieve meaningful goals, the likelihood of adopting emotionally detached attitudes increases. This relationship is understandable considering that the sense of usefulness and competence substantially sustains the willingness to maintain quality human connections. When that sense weakens, interaction with others may begin to feel like an additional burden.

The strength of this association underscores that personal accomplishment should not be interpreted as a secondary dimension of burnout. On the contrary, in this sample it emerges as a component closely tied to how students relate to their environment. Low personal accomplishment can affect motivation, reduce patience, limit empathy, and promote more distant responses in situations requiring emotional engagement. In healthcare professions, this aspect merits special attention, since performance depends not only on technical knowledge but also on the capacity to sustain respectful, ethical, and sensitive relationships with those served.

The results also reveal that the three dimensions organize into a coherent dynamic. Emotional exhaustion correlates positively with depersonalization and negatively with personal accomplishment; in turn, personal accomplishment shows an even stronger inverse association with depersonalization. This configuration suggests that burnout may manifest as a process of attrition in which emotional fatigue progressively reduces the sense of efficacy while simultaneously fostering greater affective distance. Nonetheless, the presence of personal accomplishment may serve a buffering function by maintaining a sense of purpose and diminishing the tendency toward detachment.

Discussion

These findings corroborate the tripartite structure of burnout syndrome proposed by Maslach and Jackson, who identified emotional exhaustion, depersonalization, and personal accomplishment as core dimensions. The significant positive covariation between emotional exhaustion and depersonalization ($\rho = 0.662$, $p < 0.01$) aligns with evidence from recent studies grounded in the Job Demands-Resources model (Corcuera et al., 2022; Glaría et al., 2016; Mendoza, 2018; Merino-Plaza et al., 2018; Villamar et al., 2019; Wang et al., 2024), wherein emotional exhaustion acts as a key predictor of depersonalization, further intensified by high emotional demands in educational contexts.

From a theoretical standpoint, these results extend Maslach's framework by integrating the mediating role of emotional exhaustion in the progression of burnout, consistent with conservation of resources theory, which posits that sequential loss of psychological resources triggers depersonalization (Núnez-Joseli Luis Alfredo et al., 2019; Saire & Urure, 2024).

The practical implications point toward preventive interventions focused on mitigating emotional exhaustion to curb depersonalization, for example, through training programs in emotional regulation. In Peruvian classrooms, particularly in Puno, mindfulness-based workshops or rotation of emotionally demanding tasks could be implemented, thereby reducing the risk of teacher attrition. Additionally, educational administrators could monitor these dimensions using brief versions of the Maslach Inventory, fostering well-being policies that integrate physical activity (Dapp et al., 2021a, 2021b; Hodgson et al., 2025).

Personal accomplishment, with its moderate to strong inverse correlations ($\rho = -0.523$ with exhaustion; $\rho = -0.760$ with depersonalization, $p < 0.01$), aligns with longitudinal investigations (Baldeón et al., 2023; Contreras et al., 2024; Guimarães et al., 2024). The results confirm that high levels of professional efficacy predict lower burnout incidence over time, revealing a robust inverse longitudinal relationship. This protective effect suggests that perceived competence in work performance serves as a buffer against

emotional exhaustion, reducing symptoms such as cynicism and depersonalization in demanding educational settings, such as those faced by teachers in Peru's high-Andean regions. Furthermore, this finding could be strengthened through targeted self-efficacy interventions, including goal-setting workshops and positive feedback, fostering professional resilience and improving institutional climate over the long term (Brando-Garrido et al., 2020).

These results extend the organizational climate model by proposing that personal accomplishment moderates the relationship between emotional exhaustion and depersonalization, a key link in burnout syndrome (Álvarez, 1970; Pomasqui & Juna, 2024; Santiago-Torner, 2024). In Peruvian educational settings, such as universities, this moderation implies that high levels of accomplishment, understood as the fulfillment of professional goals and sense of purpose, weaken the effect of exhaustion on depersonalization, thereby reducing cynical attitudes toward students and peers.

Conclusions

In sum, these findings confirm a significant positive correlation between emotional exhaustion and depersonalization, a moderate inverse correlation between emotional exhaustion and personal accomplishment, and a strong inverse correlation between personal accomplishment and depersonalization among healthcare professionals. These patterns extend Maslach's tripartite model, positioning personal accomplishment as a key protective moderator in demanding organizational climates, such as those found in Peru's high-Andean regions. Thus, the need to integrate positive dimensions into the analysis of burnout is reinforced, moving beyond its negative components alone.

The results underscore the practical relevance of fostering personal accomplishment to mitigate the impact of exhaustion on depersonalization in Andean healthcare settings. Institutional interventions, such as professional development programs and recognition of achievements, could enhance this protective factor, optimizing workplace well-being and quality of care. Future longitudinal research in Peru should explore cultural and organizational mediators, contributing to public policies that strengthen resilience in professions characterized by high emotional wear-and-tear.

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