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Instituto Nacional de Psiquiatría
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EDITORIAL
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Psychosocial Risk in Mexico: Beyond Regulatory Compliance with NOM-035

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NOM-035-STPS-2018 is an occupational health standard issued by the Mexican government in 2018, designed to identify, analyze, and prevent Psychosocial Risk Factors (PRFs) in the workplace, and promote a favorable organizational environment (Secretaría del Trabajo y Previsión Social [STPS], 2018). Since it came into force in 2019, the standard has formally acknowledged that work can determine mental health when organizational conditions create sustained exposure to psychosocial risks.

Contrary to popular belief, NOM-035 is not a "law against stress," but rather a risk management instrument shifting the focus from individual maladjustment to structural organizational factors. This perspective aligns with international evidence indicating that psychosocial risks are fundamentally rooted in the organization of work rather than individual vulnerability (International Labour Organization [ILO], 2022. From a public health standpoint, the standard represents progress in recognizing the right to mental health protection within the workplace. The World Health Organization (WHO) has declared that decent work and healthy organizational environments are key determinants of psychological well-being (WHO, 2022). Acknowledging PRFs involves accepting that work-related harm extends beyond physical injury to include psychosocial dimensions with potential clinical implications.

A critical appraisal of NOM-035 reveals both strengths and limitations. Its contributions include the recognition of mental health protection as an employer's legal obligation, the promotion of structural prevention through organizational review, and the potential to reduce hidden costs associated with burnout, absenteeism, and turnover. The ILO estimates that work-related stress and mental health disorders account for productivity losses of up to 4% of GDP in certain contexts (ILO, 2016). These figures show that psychosocial risk is not merely an ethical concern, but also a macroeconomic variable.

However, several years into its implementation, field experience suggests that NOM-035 tends to polarize organizational responses. Professional practice in psychosocial risk assessment and intervention across multiple productive sectors has uncovered two contrasting patterns: organizations that reduce the standard to a compliance exercise, and those that use it as a strategic lever for cultural transformation. The difference lies not in the questionnaire included in NOM-035 itself, but in the willingness to intervene based on its results.

In many workplaces, compliance remains largely procedural, prioritizing the periodic administration of surveys over structural redesign. When implementation is limited to documentation without addressing workload distribution, leadership practices, or clear clinical referral pathways, the standard risks losing legitimacy among employees. This simulation effect weakens preventive culture and reinforces distrust. Although noncompliance may trigger substantial economic sanctions under the applicable labor enforcement framework (STPS, 2018), enforcement capacity remains limited relative to the total number of workplaces nationwide. Therefore, sustainable implementation cannot depend solely on regulatory oversight; it must be anchored in organizational leadership.

National indicators reflect mixed outcomes. Recent reports indicate that anxiety (52.8%) and depression (25.1%) remain among the most frequently reported conditions within the working population in Mexico (Gobierno de México, 2024). At the same time, Mexico continues to rank among the OECD countries with the highest annual working

hours (Organisation for Economic Co-operation and Development [OECD], 2023). These data suggest that regulatory recognition has not yet translated into a substantial reduction in perceived psychological distress.

Persistent psychosocial risks include work–family interference, negative leadership styles, workplace violence, and unrealistic workload demands. Empirical research has consistently shown that chronic exposure to high job demands and low control increases perceived stress. It also alters emotion regulation, sleep architecture, and neuroendocrine stress responses, potentially precipitating clinically significant anxiety, depressive disorders, and stress-related syndromes in vulnerable individuals (Karasek & Theorell, 1990; WHO, 2022). When these conditions are normalized within organizational culture, risk evolves from situational stress to potential clinical impairment.

Within this framework, the 2030 horizon requires a decisive transition from measurement to intervention. The 2030 Agenda for Sustainable Development—particularly Sustainable Development Goal (SDG) 3 (Good Health and Well-Being) and SDG 8 (Decent Work and Economic Growth)—underscores the need to incorporate health considerations into labor and economic policy (United Nations, 2015). Moreover, the recent inclusion of stress and anxiety disorders in Mexico's official table of occupational diseases reinforces the medico-legal implications of psychosocial risk exposure. In this context, psychosocial risk management becomes directly linked to occupational disability, insurance premiums, and potential litigation.

From a clinical standpoint, it is essential to emphasize that NOM-035 is not a diagnostic instrument. While its findings may guide organizational decision-making, they do not substitute individual clinical evaluation. When exposure to PRFs becomes chronic, organizational distress can evolve into clinically significant anxiety, depressive disorders, or stress-related conditions (WHO, 2022). Under these circumstances, collective detection mechanisms must be articulated with clear referral pathways and specialized care. Otherwise, there is a risk of institutionalizing assessment without ensuring adequate intervention.

Importantly, this discussion does not imply transferring full responsibility to the business sector or replacing the public health system, which faces structural limitations in coverage and infrastructure. However, when organizational conditions directly contribute to psychosocial risk generation, preventive omission becomes ethically and strategically unsustainable. In a health system already operating under capacity constraints, externalizing the clinical consequences of workplace-related psychosocial exposure without modifying its structural causes constitutes an unstable equation.

NOM-035 offers Mexico the opportunity to consolidate a mature model of psychosocial risk governance—one that integrates regulation, evidence-based organizational redesign, and clinical articulation. Properly implemented, the standard can serve not merely as a compliance requirement, but also as an indicator of corporate governance, sustainable productivity, and human rights commitment. Improperly implemented, it risks becoming a bureaucratic artifact disconnected from actual prevention.

In conclusion, NOM-035 represents a significant regulatory step in recognizing mental health as an integral component of the work environment. Its long-term effectiveness will depend on the capacity to move beyond administrative compliance and toward an integrated model articulating regulation, organizational practice, and specialized clinical intervention, consistent with international commitments to sustainable development. Measuring psychosocial risk is a starting point; transforming organizational conditions would be the decisive step. The future of mental health in the workplace in Mexico will not be determined by the existence of the standard, but by the depth and integrity of its implementation.

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ORIGINAL ARTICLE
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Narcissism Levels and Empathic Capacity in Patients with Attention Deficit Hyperactivity Disorder

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ABSTRACT

Introduction. Studies have shown that Attention Deficit Hyperactivity Disorder (ADHD) patients often have personality disorders in adulthood. **Objective.** This study aimed to explore the notion that adult ADHD, narcissism, and empathy may be interconnected. **Method.** Researchers recruited ninety-five patients (fifty-five men and forty-two women) with ADHD according to DSM-5 diagnostic criteria. They also recruited forty-four healthy individuals for a control group (sixteen men and twenty-eight women). Researchers evaluated patients with the *Adult ADHD Self-Report Scale* (ASRS), the *Pathological Narcissism Inventory* (PNI), and the *Empathy Quotient for Adults* (EQ-60). **Results.** Researchers found that patients with ADHD had higher narcissism scores than the healthy control group. However, we did not find significant differences between the inattention and hyperactivity-impulsivity subgroups. Contrary to expectations, we did not find statistically significant differences between the Empathy Scale scores in the inattention, hyperactivity impulsivity, and healthy control groups. We also found that narcissistic features were significantly associated with ADHD severity in the logistic regression analysis model. **Discussion and conclusion.** This study found that the increased level of narcissistic pathology seen in patients with adult ADHD, particularly in the inattention and hyperactivity-impulsivity subtypes, is probably related to the severity of ADHD. These results demonstrate the importance of psychotherapies focusing on narcissistic pathology in patients with adult ADHD.

Keywords: ADHD, narcissism, empathy.

RESUMEN

Introducción. Muchos estudios han demostrado que los pacientes con Trastorno por Déficit de Atención e Hiperactividad (TDAH) a menudo tienen trastornos de personalidad en la edad adulta. **Objetivo.** Este estudio tuvo como objetivo investigar la idea de que el TDAH en adultos, el narcisismo y la empatía pueden estar interconectados. **Método.** Los investigadores reclutaron a 95 pacientes (52 hombres, 42 mujeres) con TDAH de acuerdo con los criterios diagnósticos del DSM-5 en el estudio. Los investigadores también reclutaron a 44 individuos sanos para un grupo de comparación (16 hombres y 28 mujeres). Los investigadores evaluaron a los pacientes con la Escala de Autoinforme del TDAH en Adultos (ASRS), el Inventario de Narcisismo Patológico (PNI) y el Cociente de Empatía (EQ-60) para Adultos. **Resultados.** Los investigadores encontraron que los pacientes con TDAH tenían puntajes de narcisismo más altos que el grupo de control sano. También encontramos que las características narcisistas estaban significativamente asociadas con la gravedad del TDAH en el modelo de análisis de regresión logística. **Discusión y conclusión.** Este estudio ha encontrado que el aumento del nivel de patología narcisista observado en pacientes con TDAH en adultos, particularmente en los subtipos de inatención e hiperactividad-impulsividad, está muy probablemente relacionado con la gravedad del TDAH. Estos resultados demuestran la importancia de las psicoterapias centradas en la patología narcisista en pacientes con TDAH en adultos.

Palabras clave: TDAH, narcisismo, empatía.

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is a common disorder present across cultures, with symptoms indicative of ADHD going back to childhood. Researchers have described ADHD as a neuropsychiatric disorder comprising inattention, motor hyperactivity, maladaptive impulsivity, and emotional dysregulation. In addition, ADHD causes negative consequences in every aspect of life (Jacob et al., 2016) and has been widely studied in the general population. Studies have estimated a 2.5% prevalence of ADHD in the adult population (Deberdt et al., 2015; Jacobsson et al., 2021; Nylander et al., 2009; Simon et al., 2009). Although many studies have suggested that ADHD has its roots in biological factors as a neurodevelopmental condition, it can manifest in various features and may include personality traits, such as neuroticism and impulsivity (Costa & McCrae, 1995; Nigg et al., 2020). Patients with ADHD often have other psychiatric disorders, such as mood, anxiety, personality, and substance disorders (Kessler et al., 2006; Matthies & Philipsen, 2014; Reimherr et al., 2015). Additional conditions include pathological personality traits such as emotional dysregulation, distractibility, irresponsibility, risktaking, and impulsivity. However, there are limitations in the literature on ADHD-personality disorder connections in the *Diagnostic and Statistical Manuel of Mental Disorders, Fifth Edition* (*DSM-5*) and *International Classification of Diseases and Related Health Problems-11* (*ICD-11*) models (Jacobsson et al., 2021).

Studies have shown that ADHD patients often have personality disorders in adulthood (Simon et al., 2009). Although there are often confusing or vague explanations regarding methodological processes for sample characteristics, some researchers have reported percentages of personality disorder diagnoses in adult ADHD patients ranging from 10 to 75%. Researchers have also found a higher percentage of cluster B and a lower percentage of cluster C personality disorders (Anckarsäter et al., 2006; Biederman et al., 1993; Fischer et al., 2002; Mannuzza et al., 1991; Matthies & Philipsen, 2016). Some studies on adult ADHD have evaluated patients diagnosed with personality disorders according to the DSM system. Researchers have found that patients with ADHD often have borderline and antisocial personality disorders. Although there is reason to believe that ADHD and personality disorders may share etiological mechanisms, it is not easy to explain the developmental pathways involved (Matthies & Philipsen, 2016).

Definitions of narcissism in the literature are often conflicting. The disorder is difficult to define because it comprises a broad set of symptoms. There are currently two axes of distinction. The first divides narcissism into two categories by symptom severity: the healthy type and the clinical (dysfunctional) type. Some researchers define the healthy type as a functional and sometimes advantageous personality trait (Emmons, 1984). Characteristics of this axis include high self-esteem, deficiencies in interpersonal relationships, a likelihood of career success, and low empathy. The clinical type is almost synonymous with Narcissistic Personality disorder (NPD). Characteristics of this axis include a fixed, inflexible pattern of self-importance and belief in one's uniqueness, an excessive need for admiration, and a lack of empathy, as diagnosed according to the DSM system (Jankowiak-Siuda & Zajkowski, 2013). The second axis includes grandiose and vulnerable narcissism (Wink, 1991), also known as overt and covert narcissism (Jankowiak-Siuda & Zajkowski, 2013).

Anckarsäter et al. have also highlighted the relationship between narcissistic personality disorder and ADHD. They have examined individuals with ADHD particularly predisposed to Cluster B personality disorders, comprising antisocial, narcissistic, and histrionic personality disorder. They argue that these personality disorders and ADHD may share common developmental pathways and disturbed emotional processes (Anckarsäter et al., 2006; Helgeland et al., 2005). One study has suggested that ADHD is associated with Cluster B personality disorders. Surprisingly for ADHD researchers, who have acknowledged the connection between ADHD and personality disorders, some scholars have found that the most prevalent personality disorders are narcissistic personality disorder in males and histrionic personality disorder in females. They have included 910 patients with adult ADHD (452 females and 458 males) (Jacob et al., 2016). These findings have generated intriguing data in the psychiatric field, because they underline the strong association between ADHD and narcissistic personality disorder. Nevertheless, studies in this area are as yet extremely limited.

Certain areas in the definition of empathy must be addressed. In the emotional domain, empathy is understood as the ability to share, understand, and co-experience the emotions of others (Wink, 1991; Stotland, 1969). From a cognitive perspective, empathy is the ability to imagine and understand the feelings and motivations of others (Davis et al.,1996; Eisenberg & Strayer, 1987; Ickes et al., 2000). Some authors have expanded the definition, equating it with mentalizing. These authors have also described it as the ability to be consciously aware of the thoughts, intentions, and desires of others (Frith & Frith, 2003).

Individuals experience social cognition as a process of empathic capacity enhancing the quality of social interactions. Some authors have suggested that adults with ADHD experience difficulty in facial emotion/affect processing and recognition (Ibáñez et al., 2011; Marsh & Williams, 2006; Miller et al., 2011). Others, however, have not reported empathy and social cognition deficits in patients with adult ADHD (Bora & Pantelis, 2016; Gonzalez-Gadea et al., 2013). Studies on empathy in patients

with adult ADHD are both contradictory and inconsistent. Nevertheless, the social cognition and empathy process has received a great deal of attention in various ADHD studies. In addition, some studies have reported that autism spectrum disorders and ADHD show overlap in social dysfunctions, highlighting the relationship between ADHD symptoms and the empathizing–systemizing cognitive style (Groen et al., 2018).

This study investigated a set of factors regarding narcissism and empathy in adult ADHD. Our aim in this study was to examine ADHD symptoms, narcissism, and empathy levels in ADHD patients and the control group. Our main argument is that patients with ADHD have a significantly higher level of narcissism and a lower level of empathy. We also suggest that there is a significant relationship between symptom severity and narcissism levels in individuals with ADHD.

METHOD

Participants

In this cross-sectional study, researchers drew the study samples from patients attending the psychiatry clinics of the Bağcılar Training and Research Hospital (Istanbul, Turkey) and the Prof. Dr. Ilhan Varank Sancaktepe Training and Research Hospital (Istanbul, Turkey). Patients were diagnosed with Attention Deficiency and Hyperactivity Disorder based on the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)* criteria, which was confirmed by two senior psychiatrists (American Psychiatric Association, 2013). Initially, 120 patients and forty-four healthy controls were identified. Researchers included patients who did not have a history of psychotropic drug usage or who had stopped using at least three months prior to the beginning of the study. The exclusion criteria for the patient group were co-existing psychiatric disorders; mental retardation; being under the age of 18 and having a history of any neurological disease that could prevent communication such as organic mental disorders, head trauma, dementia, or epilepsy. Clinicians excluded twenty-five patients from the study because they were diagnosed with another comorbid mental disorder according to DSM-5. After applying the inclusion-exclusion criteria, researchers included patients (fifty-two men and forty-two women) with ADHD. They also formed a comparison group consisting of forty-four healthy controls (sixteen men and twenty-eight women). This group consisted of subjects who did not have a psychiatric or neurological disorder, were aged over 18 years, and agreed to participate in the study. During the selection process, efforts were made to match the groups for age and gender to ensure comparability. Although exact numerical equality was not achieved, statistical analyses confirmed no significant differences between the groups in terms of age and gender, minimizing potential demographic variability in the study.

Informed consent was obtained from all patients included in the study. A semi-structured sociodemographic and clinical data form and *Adult Attention Deficit Hyperactivity Disorder Self-Report Scale* (ASRS), *Pathological Narcissism Inventory* (PNI), and *Empathy Quotient* (EQ-60) scores were administered to all participants on admission.

Measurements

The semi-structured sociodemographic and clinical data form records participant characteristics such as age, gender, and clinical data. *The Pathological Narcissism Inventory* (PNI) is a 6-point Likert-type self-report scale developed by Pincus et al. (2009) to assess vulnerable and grandiose narcissism. The fifty-two item scale evaluates narcissism through two upper factors and seven sub-factors, including three for vulnerable narcissism and four for grandiose narcissism. The validity and reliability of the Turkish version were confirmed by Sen and Barıskın (2019), with Cronbach's alpha reliability at .93 and test-retest reliability coefficient at r = .91. The *Adult ADHD Self-Report Scale* (ASRS), comprising eighteen items scored from one to four, was designed by the World Health Organization to screen for ADHD symptoms in adults and validated by Doğan et al. (2009) in the Turkish version. The *Empathy Quotient* (EQ-60), developed by Lawrence et al. (2004), measures empathy through forty questions and twenty distractors. The reliability and validity of the Turkish version were assessed by Bora and Baysan (2009).

Statistical analysis

Study data were analyzed with the SPSS 25.0 for Mac OS (Armonk, NY: IBM Corp.). The Kolmogorov-Smirnov test was used to determine whether the distribution of numerical data was normal before further analysis. Accordingly, chi-square, ANOVA and Student's t-test were utilized to compare categorical and continuous variables between groups. The relationships among data were determined with the Pearson Correlation test. Linear regression analysis was undertaken to determine the independent variables predicting effects on narcissistic characteristics in ADHD patients: a p-value < .05 was considered significant.

Ethical considerations

Ethics committee approval was obtained for this research at the Bağcılar Health Sciences University Training and Research Hospital Ethics Committee on June 12, 2020, with decision number 2020.06.1.07.078.

RESULTS

A comparison of the sociodemographic data of patients between groups is shown in Table 1. According to the sub-diagnosis of ADHD, forty-four patients were in the inattention group (I), fifty-one were in the hyperactivity and impulsivity (HI) group, and forty-four were in the healthy control (HC) group. Among the study participants, the mean age of the inattention group was 23.63 ± 5.72, the mean age of the hyperactivity and impulsivity group was 23.96 ± 7.95, and the mean age of the healthy control group was 24.06 ± 5.56, with no statistically significant difference being found. ($p > .05$). Educational achievement was significantly lower in the inattention, hyperactivity, and impulsivity groups than in the healthy control group ($p = 0$). There was no statistically significant difference between groups in terms of gender ($\chi^2 = 4.590$, $p = .101$). The normality of the data was assessed using the Kolmogorov-Smirnov test. The results showed that total ADHD ($p = .210$), narcissism ($p = .230$), and empathy scores ($p = .059$) did not deviate significantly from normality.

The evaluation of clinical features is shown in Table 2. There is a statistically significant difference between the three groups in the PNI scores ($p = .001$). PNI scores were significantly higher in both the inattention group ($p = .001$) and the hyperactivity and impulsivity group ($p = .001$) than in the healthy control group. In the pathological narcissism inventory, narcissistic grandiosity and narcissistic vulnerability subgroup scores were found to be significantly higher in the inattention, and hyperactivity and impulsivity groups than in the healthy control group ($p = 0$).

The relationship between the sociodemographic and clinical characteristics of participants is shown in the correlation chart in Table 3. There is a negative correlation between educational attainment and PNI score ($r = -.243$, $p < .01$), narcissistic grandiosity score ($r = -.236$, $p < .01$), and Narcissistic vulnerability score ($r = -.236$, $p < .01$). The *Adult ADHD Scale* score was positively correlated with the PNI score ($r = .337$, $p < .01$), Narcissistic grandiosity score ($r = .317$, $p < .01$), Narcissistic vulnerability score ($r = .335$, $p < .01$), and Empathy Scale score ($r = .238$, $p < .05$). There is a positive correlation between the

Table 1
Evaluation of sociodemographic variables

	All patients (n = 139)							
	I (n = 44)	*HI (n = 51)*	*HC (n = 44)*					
	Mean ± SD	*Mean ± SD*	*Mean ± SD*	*df*	*p*[1]	*p*[2]	*p*[3]	*p*[4]
Age[a]	23.63 ± 5.72	23.96 ± 7.95	24.06 ± 5.56	2	.956	.973	.955	.997
Educational attainment[a]	12.56 ± 3.44	11.35 ± 3.41	14.54 ± 3.37	2	**.0**	.197	**.2**	**.0**
	n (%)	*n* (%)	*n* (%)	χ^2	*df*	*p*		
Gender				4.590	2	.101		
Male	24 (54.5)	29 (56.9)	16 (36.4)					
Female	20 (45.5)	22 (43.1)	28 (63.6)					
Marital Status				5.232	2	.073		
Unmarried	40 (90.9)	43 (84.3)	32 (72.7)					
Married	4 (9.1)	8 (15.7)	12 (27.3)					
Employment status				2.504	2	.286		
Unemployed or sporadically employed	5 (11.4)	10 (19.6)	4 (9.1)					
Regularly employed	39 (88.6)	41 (80.4)	40 (90.9)					
Smoker				2.481	2	.289		
No	29 (65.9)	32 (62.7)	34 (77.3)					
Yes	15 (34.1)	19 (37.3)	10 (22.7)					
Suicide Attempts				2.319	2	.314		
No	40 (90.9)	43 (84.3)	42 (95.5)					
Yes	4 (9.1)	8 (15.7)	2 (4.5)					
Adverse Childhood Experiences				1.679	2	.432		
No	32 (72.7)	40 (78.4)	37 (84.1)					
Yes	12 (27.3)	11 (21.6)	7 (15.9)					

Note: p1: Inattention, hyperactivity and impulsivity, healthy controls; p2: Inattention, hyperactivity and impulsivity; p3: Inatention, healthy controls; p4: Hyperactivity and impulsivity, healthy controls; $p < .05$ statistically significant (bold values); Abbreviations: χ^2: Chi-square; Mean: Mean; *SD*: Standard deviation; I: Inattention; HI: Hyperactivity and impulsivity; HC: Healthy controls; [a]: ANOVA and Tukey-HSD as posthoc test were used.

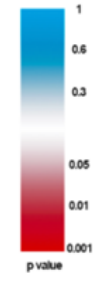
Table 2
Comparative evaluation of clinical features

	All patients (n = 139)							
	I (n = 44)	*HI (n = 51)*	*HC (n = 44)*					
	Mean ± SD	*Mean ± SD*	*Mean ± SD*	*df*	*p*[1]	*p*[2]	*p*[3]	*p*[4]
Pathological Narcissism Inventory[a]	136.40 ± 43.97	132.25 ± 42.32	88.31 ± 33.56	2	**.0**	.871	**.0**	**.0**
Grandiose Narcissism[a]	68.29 ± 21.28	67.25 ± 20.64	44.52 ± 19.43	2	**.0**	.967	**.0**	**.0**
Vulnerable Narcissism[a]	68.11 ± 23.96	65.00 ± 23.07	43.79 ± 15.81	2	**.0**	.579	**.0**	**.0**
Empathy Scale[a]	31.43 ± 13.23	28.03 ± 10.33	29.40 ± 10.11	2	.344	.312	.678	.825
	I (n = 44)	*HI (n = 51)*						
	Mean ± SD	*Mean ± SD*	*F*			*p*		
Adult ADHD Scale[b]	43.18 ± 9.90	41.23 ± 9.59	.112			.334		

Note: p[1]: Inattention, hyperactivity, and impulsivity, healthy controls; p[2]: Inattention, hyperactivity and impulsivty; p[3]: Inattention, healthy control; p[4]: Hyperactivity and impulsivity, healthy control, $p < .05$ statistically significant (bold values). Abbreviations: *SD*: Standard deviation; I: Inattention; HI: Hyperactivity and impulsivity; HC: Healthy control; ADHD: Adult Attention Deficit Hyperactivity Disorder. [a]: ANOVA and Tukey-HSD as posthoc test were used; [b]: Student's *t*-test was used.

Table 3
Evaluation of clinical features with correlation analysis in attention deficit and hyperactivity disorder patients

	Correlations							
r	*1*	*2*	*3*	*4*	*5*	*6*	*7*	
1. Age	1							
2. Educational Attainment	.112	1						
3. Adult ADHD Scale	-.093	-.030	1					
4. PNI	-.126	-.243	.337					
5. Grandiose Narcissism	-.099	-.236	.317	.970				
6. Vulnerable Narcissism	-.144	-.236	.335	.972	.887			
7. Empathy Scale	-.080	-.090	.238	.147	-.034	.314	1	



Note: r: Pearson Correlation Test coefficient , PNI: Pathological Narcissism Inventory, ADHD: Attention Deficit Hyperactivity Disorder.

Narcissistic grandiosity score and the Narcissistic vulnerability score ($r = .887$, $p < .01$) and between the narcissistic vulnerability score and the Empathy Scale score ($r = .314$, $p < .01$).

In Table 4, the effect of clinical risk factors on attention deficit hyperactivity disorder was evaluated by multiple linear regression analysis. The PNI scale and the Empathy scale were determined as the parameters to be evaluated in relation to ADHD in the model. A significant regression model was obtained ($R^2 = .134$; χ^2 (7.119) = 597.170; $p < .001$) and narcissistic features ($\beta = .31$, $p < .05$) were significantly associated with ADHD severity.

DISCUSSION AND CONCLUSION

This study provides a review of the research suggesting that pathological narcissism, adult ADHD, and empathy may be

Table 4
Evaluation of the effect of clinical risk factors on attention deficit hyperactivity disorder through multiple linear regression analysis

	Unstandardized Coefficients		*Standardized Coefficients*			
	B	*S.E.*	*Beta*	*t*	*Sig.*	*[95% CI]*
Adult ADHD Scale[†]						
Constant	29.597	3.464		8.545	**.0**	[22.717 – 36.476]
PNI	.066	.023	.291	2.863	**.005**	[.020 - .112]
Empathy Scale	.142	.084	.151	1.480	.142	[-.042 - .290]

Note: [†], Results of linear regression, model summary; χ^2 (7,119) = 597.170; *df* = 2; $R^2 = .134$; $p < .001$; variables included in the model: Pathological Narcissism Inventory (PNI), Empathy Scale; dependent variable: Adult Attention Deficit Hyperactivity Disorder (ADHD) Scale. $p < .05$ statistically significant.

linked. The researchers analyzed the role of narcissism and empathy levels in mediating ADHD severity in the context of an overlapping phenomenological system. To summarize results, researchers found that patients with ADHD had higher narcissism scores than the healthy control group. However, they did not find a significant difference between the inattention group and the hyperactivity and impulsivity groups in terms of PNI scores. Unexpectedly, we did not find statistically significant differences in *Empathy Scale* scores between the inattention, hyperactivity-impulsivity, and healthy control groups. We also found that narcissistic features were significantly associated with ADHD severity in the logistic regression analysis model.

The severity symptoms of adult ADHD that may be associated with narcissism levels in this disorder were not evaluated in this article. It is tempting, though, to speculate as to the importance of personality traits and personality disorders. Patients with adult ADHD can have a combination of personality traits and personality disorders. For example, Bernardi et al. have reported that patients with ADHD often have borderline personality disorder and narcissistic personality disorder (Bernardi et al., 2012). Fossati et al. have also reported an association between childhood manifestation of ADHD and adult borderline personality disorder diagnosis (Fossati et al., 2002). In addition, Jacob et al. have found that the most prevalent personality disorders are narcissistic personality disorder in males and histrionic personality disorder in females (Jacob et al., 2016). In this study, we found extremely high narcissistic scores in patients with adult ADHD. It is suggested that the specific phenomenology of adult ADHD be more carefully evaluated for narcissistic pathology in these clinical findings.Moreover, we hypothesize that patients with adult ADHD with high levels of narcissism may have severe clinical disorders. Further evaluation of narcissistic pathology and personality disorder is required. We suggest that the increased narcissistic pathology seen in adult ADHD patients, particularly the grandiose or vulnerable narcissistic subtypes, are likely to be key mechanisms underlying the clinical disturbances demonstrated in narcissistic pathology.

We suggest that ADHD may occur before the narcissistic personality develops. We also posit that this developmental process is not easy to understand. The two disorders may begin in early childhood. But earlier onset of ADHD symptoms would appear to be more logical. Further investigation of candidates for these shared risk factors has focused predominantly on certain levels. Jacob et al. have demonstrated the relevance of Gene × Environment interactions in the pathogenesis of personality disorders and adult ADHD (Jacob et al., 2010). Jakob et al. have also suggested that personality transformations may be a result of adult ADHD and that the symptoms cause enduring psychological stress. The observed symptoms of personality disorders in adult ADHD patients may reflect a specific type of coping strategies (Jacob et al., 2007, 2016).

In the emotional realm, authors often describe empathy as the ability to share and experience the emotions of others (Davis et al., 1996; Eisenberg & Strayer, 1987; Stotland, 1969). From a cognitive perspective, empathy is the capacity to imagine and understand the feelings and motives of other people (Batson, 2009; Decety & Jackson, 2004; Decety & Svetlova, 2012; Ickes et al., 2000) . It also includes the ability to be consciously aware of their thoughts, intentions, and desires, known as mentalization (Frith & Frith, 2003) or possessing theory of mind (Decety & Jackson, 2004; Premack & Woodruff, 1978). When we evaluate the literature, we notice that empathy has a multifaceted conceptual framework. The literature brings together all the perspectives mentioned, describing empathy as a complex process (Davis et al., 1996; Ickes et al., 2000). Groen et al. studied cognitive and emotional empathy in adult ADHD, finding low emotional empathy scores. They demonstrated that ADHD traits were related to the emotional aspect of empathy. But they did not find the more complex aspects of empathy in patients with adult ADHD (Groen et al., 2018). Some authors have pointed out the problems adults with ADHD experience with facial emotion/affect processing and recognition (Miller et al., 2011). Other authors, however, have not reported empathy or social cognition deficits in patients with adult ADHD (Bora & Pantelis, 2016; Gonzalez-Gadea et al., 2013). Moreover, some studies report an overlap between autism spectrum disorders and ADHD in social dysfunction, and a link between ADHD symptoms and the empathizing–systemizing cognitive style (Groen et al., 2018). We did not find statistically significant empathy scores in the inattention, hyperactivity-impulsivity, and healthy control groups. When we evaluated them retrospectively, we observed contradictions. Many authors state that narcissistic pathology results from a lack of empathy. There are two types of narcissism: grandiose and vulnerable (Wink, 1991), alternatively known as overt and covert (Jankowiak-Siuda & Zajkowski, 2013). High levels of extraversion, self-confidence, self-esteem, exhibitionism, and aggression characterize the grandiose type. Conversely, introversion, low self-esteem, anxiety, and high susceptibility to traumas are associated with the vulnerable type (Jankowiak-Siuda & Zajkowski, 2013; Pincus et al., 2009; Rose, 2002; Wink, 1991). Many studies have shown that the traits associated with all narcissism subtypes are selfishness, disregarding others, self-centeredness, and low empathy (Jankowiak-Siuda & Zajkowski, 2013). The observation that adult ADHD and empathic capacity could be associated with altered narcissistic pathology suggests that emotional and cognitive empathy may influence the severity of ADHD in which the pathologic system plays a role. The relationship between adult ADHD, narcissism, and empathy requires further research.

This study has certain limitations that should be considered when interpreting results. Although efforts were made to match groups for age and gender, exact numerical equivalence could not be ensured. Statistical analyses indicated no significant differences between the groups in these variables, yet potential demographic influences cannot be ruled out. Additionally, the unequal sample sizes across groups may have affected the statistical power of certain analyses. Finally, slight differences in gender distribution may have influenced outcomes related to gender-specific characteristics, warranting cautious interpretation of results.

This study suggests that the increased level of narcissistic pathology seen in patients with adult ADHD, particularly in the inattention and hyperactivity-impulsivity subtypes, is probably related to the severity of ADHD. Whether the high level of narcissistic pathology associated with adult ADHD is specific to this disorder or symptoms of other disorders requires further clarification. The relationship between adult ADHD and narcissism also warrants further research. Equally important is a better understanding of treatments based on psychopharmacology and psychotherapy. This research underlinesthe significance of therapies concentrating onnarcissistic pathology.

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Conflicts of interest

The authors declare they have no conflicts of interest.

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Psychophysiological and Behavioral Effects of Meditation on High School Students

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ABSTRACT

Introduction. Although anxiety and depression disorders in adolescence are considered a worrying public health problem, there is a dearth of research on the issue, particularly of intervention strategies in the school environment designed to improve students' mental health. **Objective.** To evaluate the quality of life and anxiety, stress, and depression levels in high school adolescents regularly engaging in meditation. **Method.** This is a quasi-experimental, mixed design study with qualitative features, comprising 473 high school students. Depression, anxiety, and stress levels was evaluated using the *Depression, Anxiety and Stress Scale for Adolescents (DASS-21)*, and quality of life was assessed with the *WHOQOL-bref questionnaire* before and after eight weeks of meditation. The qualitative evaluation was guided by participant observation, in-depth interviews and focus group testimonials. **Results.** Results showed a significant improvement in the perception of quality of life in the following domains: physical (p = .022), psychological (p = .018), personal satisfaction (p = .012), and general quality of life (p = .014). Improvements were observed and across all domains (Depression: p = .014; Anxiety: p = .002; Stress: p = .007) in the comparison between the pre- and post-meditation period. The control of physical, psychophysiological and behavioral symptoms was reflected in the analysis of the interviews and the focus group testimonial. **Discussion and conclusion.** Meditation improved quality of life, reducing physical and psychophysiological symptoms, and promoting healthy behavioral changes in students.

Keywords: Anxiety, psychological stress, depression, adolescent, meditation.

RESUMEN

Introducción. Los trastornos de ansiedad y depresión en la adolescencia son considerados actualmente un preocupante problema de salud pública, pero aún existen pocos estudios sobre el tema, especialmente con estrategias de intervención en el ámbito escolar que busquen mejorar la salud mental de los estudiantes. **Objetivo.** Evaluar la calidad de vida y los niveles de ansiedad, estrés y depresión en adolescentes de secundaria que practican regularmente la meditación. **Método.** Se trata de un estudio cuasiexperimental de diseño mixto con características cualitativas, compuesto por 473 estudiantes de secundaria. La evaluación de los niveles de depresión, ansiedad y estrés se realizó mediante la Escala de Depresión, Ansiedad y Estrés para Adolescentes (DASS-21), y la calidad de vida mediante el cuestionario WHOQOL-bref antes y después de ocho semanas de meditación. La evaluación cualitativa se guió por la observación participante, entrevistas en profundidad y testimonios de grupos focales. **Resultados.** Los resultados mostraron una mejora significativa en la percepción de la calidad de vida en los siguientes dominios: físico (p = .022), psicológico (p = .018), satisfacción personal (p = .012) y calidad de vida general (p = .014), así como en todos los dominios (Depresión: p = .014; Ansiedad: p = .002; Estrés: p = .007) en la comparación entre el período pre y post-meditación. El control de los síntomas físicos, psicofisiológicos y conductuales fue evidenciado en el análisis de las entrevistas y los testimonios del grupo focal. **Discusión y conclusión.** La meditación mejoró la calidad de vida, redujo los síntomas físicos y psicofisiológicos, además de promover cambios de comportamiento saludables en los estudiantes.

Palabras clave: Ansiedad, estrés psicológico, depresión, adolescente, meditación.

INTRODUCTION

Intense biopsychosocial transformations occur in adolescence, expressed through significant mental and organic changes capable of eliciting responses peculiar to this age group, which may be associated with mental disorders or inappropriate behavioral manifestations (Santrock, 2014).

These biopsychosocial transformations in adolescence may be associated with certain losses that occur during human development, such as the child's body, childhood, identity, and socio-familial role. These combine with the processes of affective choice, and autonomy (from their parents) inherent in becoming an adult, and the physiological transformations involved in this maturation process (Jatobá & Bastos, 2007).

The relationships established between adolescents and their families and communities constitute a historical, social, and cultural formation exerting an enormous influence on various aspects of their lives. They either encourage psychophysiological responses such as self-confidence and trust in oneself and others, or trigger stress, anxiety, and depression, negatively interfering with their quality of life (Patias et al., 2017).

Everyone is susceptible to unpleasant moments and emotions that can alter their behavior and cause mood swings that can lead to temporary depression, feelings of dissatisfaction, loneliness, lack of understanding, and rebellious attitudes. However, during adolescence, teenagers undergo an intense phase of emotional reorganization, making them vulnerable to the onset of depression and anxiety symptoms (Jatobá & Bastos, 2007; Grolli et al., 2017).

Although anxiety and depression disorders are increasingly common in adolescents, there are still few epidemiological studies on the subject, particularly of schoolchildren and the use of intervention strategies to reduce these symptoms (Rocha et al., 2013).

This study evaluated students at the Instituto Federal do Ceará, a Brazilian school of professional and technological education,. The school has a rigorous process for vetting students wishing to be admitted to high school. Once admitted, students follow a challenging curriculum, which is why many parents choose to enroll their offspring in the first year of high school.

Professional and technological education in Brazil has an intense curriculum and a weekly workload, often triggering anxiety symptoms in students. The time spent on classes and studies due to the new schedule and curricular organization particularly affects students in the first year of high school (Tabaquim et al., 2015).

First-year high school students must cope with several anxiogenic and stressful factors such as tests, a curriculum with a large number of disciplines, dense content, and full-time study. They also experience difficulties adapting to a new study routine, and parental pressure to excel academically, in addition to the physical, social, and psychological changes inherent in adolescence (Soares & Almeida, 2020).

The reorganization of their daily schedule and the use of strategies to support mental health, such as regularly engaging in meditation, can help reduce anxiety, stress, and/or depression symptoms, enhancing the quality of life of these students.

During this stage, meditation constitutes a possible instrument for physical, emotional, mental, social, and cognitive strengthening. It increases concentration, contributing to the perception of physical and emotional sensations and promoting self-discipline in health care. It fosters well-being, relaxation, the reduction of stress and anxiety, hyperactivity, and depression symptoms and can easily be incorporated into the school environment (Cossia & Andrade, 2020).

This study sought to evaluate the quality of life and anxiety, stress, and depression levels in high school adolescents regularly engaging in meditation.

METHOD

Participants

This is a quasi-experimental, mixed study with qualitative features, consisting of intentional non-probability sampling, with a population of approximately 600 students. The sample comprised 473 high school students of both sexes aged 13-17, (M = 15.35, SD = 1.22, 82% white) at the Federal Institute of Ceará (IFCE), Brazil. They were enrolled in physical education classes in the first semester of 2022, with over 75% attendance rates in classes. The sample excluded those who were absent from any evaluation stage or had engaged in some kind of contemplative practice (meditation, yoga, or Tai Chi) for at least three months. As stated in the introduction to this manuscript, this educational institution was chosen because of its curriculum and weekly workload, which tend to trigger anxiety symptoms in students.

Measures

This study was undertaken in 2022, with the implementation of meditation, followed by data collection between March and May 2022.

The quality of life assessment was performed using the *WHOQOL-Bref Questionnaire*, an abbreviated version of the 26-item *WHOQOL-100*. The first question refers to the quality of life in general and the second to personal satisfaction with health. The remaining twenty-four questions focus on four domains: physical, psychological, social relationships, and environment. Domain scores represent values of between zero and one hundred, with those closest to zero being the worst and those closest to one hundred being the

best. An individual who scores fifty on a particular domain can therefore be considered average for that domain (Fleck et al., 2000; Kluthcovsky & Kluthcovsky, 2009).

Depression, anxiety, and stress levels were assessed using the *Depression, Anxiety, and Stress Scale for Adolescents (DASS-21)*, adapted and validated for Brazilian adolescents. In this scale, participants indicate the degree to which they experience each of the symptoms described in the items during the previous week on a 4-point Likert-type scale. Item scores range from 0 (does not apply to me) to 3 (applies to me a lot, or most of the time). Depression, anxiety, and stress scores are determined by adding the scores for the twenty-one items (Patias et al., 2016).

During the intervention period, Participant Observation was undertaken based on a Field Diary, rating the feelings and informal attitudes in each session. Two meetings were held through the Focal Group in the 12th and 24th sessions, consisting of three guiding questions: 1. How are you feeling today? 2. How have you felt so far with the practice? 3. How do you feel about what brought you here? (Minayo, 2012).

After the 24th session, an individual interview was conducted with twenty-eight randomly selected students. This number was determined by the theoretical saturation criterion. This interview aimed to identify the feelings and possible transformations arising from meditation, with the following questions: "Why did you start doing meditation?" and "How do you identify these feelings today?" These interviews were recorded in full by a voice recorder. Observations and non-verbal expressions were noted in a report.

Procedure

This research project was undertaken for eight weeks, during which meditation was based on focused attention with breathing in three stages, lasting ten minutes, occurring three times a week, totaling twenty-four guided meditation sessions. In addition, students were instructed to practice meditation daily (Cardoso, 2011).

First of all, the sample characterization questionnaire, the ethical consent form (personal and responsible), and the diagnostic evaluation instruments *(DASS-21; WHO-QOL-Bref)* were administered. The diagnostic evaluation was followed by meditation practices included in physical education classes. In the 12th and 24th sessions, meetings were held in the Focus Group. After eight weeks of meditation, the quantitative assessment instruments were re-administered and interviews conducted.

Meetings usually began with students sitting on a mat in a neutral spine posture. They were asked to close their eyes and try to notice their breathing without trying to direct or control it. After a few breaths, they began counting in three counts for both inhalation and exhalation. After taking a few breaths in three counts on the leader's command, they counted in their heads, with personal guidance according to the individual needs/desires of each participant. They counted in their heads for three to four minutes, at which point they were asked to continue breathing calmly without a set time limit. They were then asked to breathe freely and observe themselves. After about two or three minutes, they opened their eyes and discussed the experience with the leader.

Data analysis

Quantitative data were analyzed using SPSS Statistics 20.0, expressed as mean and standard deviation. The significance level established was $p < .05$, following the Wilcoxon test.

Qualitative data were analyzed using IRAMUTEQ software (Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires) through classic lexicographical analyses to understand the statistical data and quantify the evocations and forms. Descending Hierarchical Classification was obtained to measure the dendrogram data according to the classes generated, considering words with $x^2 > 3.84$ ($p < .05$). The software identified lexical patterns through similarity analyses, subsequently validated by two independent researchers to ensure consistency and accuracy.

These statements were transcribed from the characterization of the interviewees, the testimonials they provided, and the opinions given in the focus group meetings, constituting the text corpus. Each text had a command line that was arranged for the interviews, student_01 (S1) to student_28 (S28), and for the focus group, block_01 (B1) to block_03 (B3). All data were subsequently analyzed using the content analysis method (Minayo, 2012).

The general corpus of the interviews consisted of ten texts, separated into sixty-six text segments (TS), using fifty-seven TS (86.36%). Nine segments were excluded due to problems in the transcriptions or the thematic irrelevance with respect to the analysis categories. 1,723 occurrences emerged (words or forms), including 524 different words and 303 with a single occurrence. A class diagram was organized with examples of words from each class evaluated through the chi-square test (x^2) to illustrate the words in the text corpus in their respective classes. They contain the evocations that present words that are similar to each other and different from the other classes.

The general corpus of statements collected in the focus group consisted of three texts, divided into thirty-one text segments (TS), with the use of thirty-one TS (100.0%). Four hundred and forty occurrences emerged (words or forms), with 190 different words and 124 with a single occurrence.

Ethical considerations

The Ethics Committee of the Federal Institute of Ceará approved this study, with verdict no. 5,345,261.

RESULTS

This study evaluated 473 students with a mean age of 15.35 (± 1.22), 316 (66.80%) female and 157 (33.20%) male, 82% of whom were white. They were mostly students in the first year of high school (336; 71.03%), 252 (53.27%) of whom declared that they had already failed at least one subject at some time.

The results showed a significant improvement in the perception of the quality of life of these students in the following domains: physical, psychological, personal satisfaction, and general quality of life after eight weeks of regular meditation practice (Table 1). Although there were significant improvements in anxiety and stress, effect sizes (Cohen's d) ranged from .3 to .5, showing moderate effects.

Analysis of the Depression, Anxiety, and Stress Scale for Brazilian adolescents revealed a significant improvement across all domains: depression, anxiety and stress in the comparison between before and after meditation (Table 2).

Table 1
Statistical results of the WHOQOL-bref questionnaire

Domains	*Weeks*	*M (± SD)*	*p*
Physical	0	1.82 (± .47)	.022*
	8	2.20 (± .96)	
Psychological	0	2.23 (± .84)	.018*
	8	3.34 (± .79)	
Social relationships	0	1.97 (± .95)	.092
	8	2.14 (± .47)	
Environment	0	1.97 (± .56)	.073
	8	2.18 (± .75)	
Personal satisfaction	0	1.78 (± .69)	.012*
	8	3.44 (± .64)	
General quality of life	0	2.04 (± .78)	.014*
	8	3.57 (± .87)	

Note: M: Mean; *SD*: Standard Deviation; *Statistical significance according to Wilcoxon test.

Table 2
Statistical results of the depression, anxiety and stress scale for adolescents (DASS-21)

Domains	*Weeks*	*M (± SD)*	*p*
Depression	0	1.59 (± .77)	.014*
	8	.29 (± .19)	
Stress	0	1.99 (± .62)	.007*
	8	.29 (± .21)	
Anxiety	0	.83 (± .59)	.002*
	8	.06 (± .04)	

Note: M: Mean; *SD:* Standard Deviation; *Statistical significance according to the Wilcoxon test.

Contents of the interviews were categorized into three classes: Class 1—"Meditation in the control of psychophysiological symptoms" with nineteen TS (33.33%); Class 2—"Breathing exercises as a strategy for changing behavior" with fourteen TS (24.56%), and Class 3— "Meditation in controlling physical symptoms and improving academic performance" with twenty-four TS (42 .11%).

Each of the classes found through the analysis of Descending Hierarchical Classification was operationalized and exemplified (Figure 1).

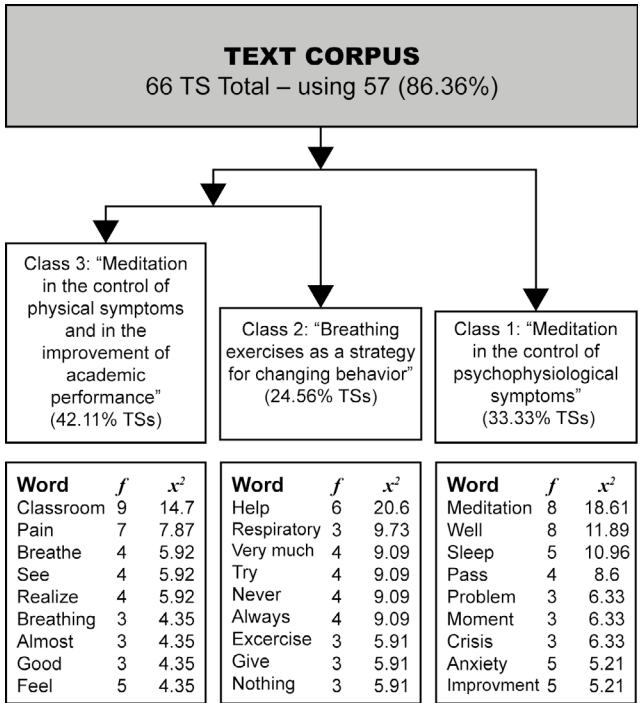

Figure 1. Interview class diagram.

Class 1 refers to the perception of improvement in psychophysiological symptoms, such as a reduction in anxiety, chronotropic symptoms, and loss of appetite, as well as improved sleep and mood. A selection of respondents' comments is given below:

> *When I'm about to do the meditation, I think, when I do it, all this will pass. I'll feel better about the anxiety. Sometimes, when I have a problem, it will pass. It will subside. [...].* (S3)

> *[...] my eyes closed like this, my heart raced, I lost my appetite and had it in my head. Sometimes, I lose sleep, but today, I'm much better [...].* (S16)

> *[...] I was a little sleepy on the bus, as I leaned against the window. But when I got here, when I started to meditate, the sleepiness disappeared, and that's something that I'm really impressed with. I don't feel sleepy all day anymore, I don't feel*

like staying in bed anymore, and I've been crying a lot less. (S5)

Class 2 points to breathing exercises as a strategy to change the behavior of the adolescent students evaluated. It shows that the pedagogical experience learned not only promotes the improvement of symptoms of depression and anxiety, but is also incorporated into the behavioral habits of these students. They provided the following testimonials:

[...] This thing of breathing counting the three counts helped me to ease my mind, you know? Defocus. Then, I no longer feel so much need for medication. (S24)

I've had depression for a long time, and my mother has been trying to help me for a while. Breathing exercises have made me feel so much better. I do them every day. (S4)

With you, I understood what breathing exercises were, and I said: I'll try to do them every day whenever I feel anxious, and it really works. (S8)

Class 3 shows that regular meditation reduced physical symptoms, especially pain, common in people with anxiety, depression, and stress. It has also been cited as a practice that promotes improved grades in school subjects. Interviewee reports included the following comments:

I no longer wanted to leave the house and come to class, and I was feeling a lot of severe pain, really [...] only with breathing I noticed that these pains have diminished. I don't know... I don't know how to explain it. It hurts, but not so much. Nowadays, I almost don't feel it. (S7)

[...] Whenever I get nervous during a test, I remember to breathe the way you taught me, and everything works out. (S1)

Even my grades have improved, I don't have headaches so much, and I can sleep better. (S17)

The analyzed content of the focus group was categorized into two classes: Class 1— "Control of psychophysiological and behavioral symptoms" with 16 TS (51.61%), and Class 2— "Control of physical symptoms" with 15 TS (48.39%).

In the same way as the results presented in the interviews, a class diagram was organized with examples of words from each class evaluated through the chi-square test (x^2). Each of the classes found through the analysis of Descending Hierarchical Classification was operationalized and exemplified (Figure 2).

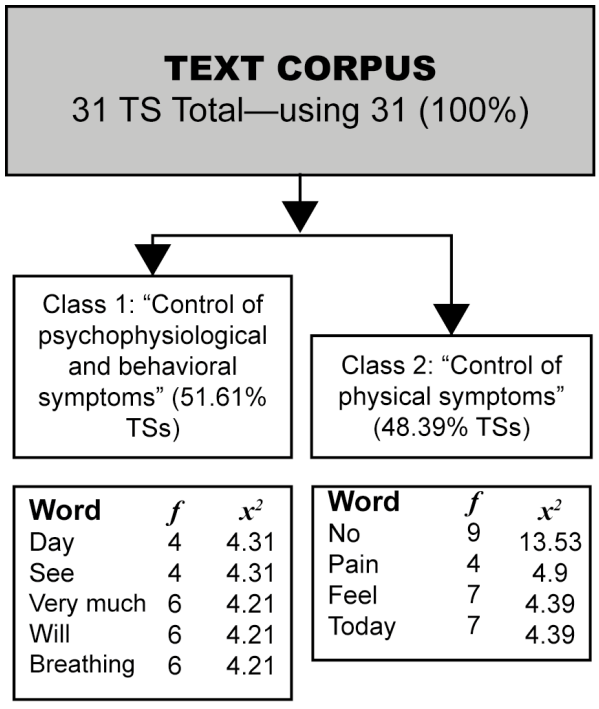

Figure 2. Focus group class diagram.

Class 1 of the focus group shows that regular meditation achieved increased willingness to perform daily activities, a sense of well-being, and improved sleep. These results corroborate those found in classes 1 and 2 of the interviews. Testimonials include the following remarks:

I wake up every day wanting to go to school. [...] feeling much more healthy and lively. I wake up early and sleep much better. (B3)

I've been feeling really good, you know? Getting better day by day. I don't get so anxious anymore [...]. (B1)

I no longer feel my heart racing, and I even play with my friends more. (B2)

Class 2 of the focus group notes that regular meditation had a positive effect on physical symptoms, improved pain and fibromyalgia symptoms, improved concentration, and reduced medication use. These findings corroborate those revealed in class 3 of the interviews. Students observed the following:

[...] I no longer feel so much pain, nor do I feel so tired. I have fibromyalgia, yet despite that, my doctor said I'm doing much better. (B3)

I notice that I'm breathing better and don't feel much pain anymore. (B2)

At first, it was hard to concentrate because of the thoughts and the pain, but today I don't feel any difficulty. (B2)

DISCUSSION AND CONCLUSION

The assessment of the quality of life has been used for various purposes, not only by the scientific community but also in clinical practice, serving as a comparative foundation in therapies and different pedagogical strategies for mental health intervention (Patias et al., 2016).

This study showed that meditation practice helped improve the quality of life of the assessed students, more specifically in the physical and psychological domains. On the other hand, there were no statistically significant changes in the social relations and environment domains, suggesting aspects warranting further exploration in other studies.

Meditation proved to be efficient in statistically significantly reducing depression, anxiety, and stress symptoms in the students analyzed, using breathing as a technical-pedagogical foundation. However, the effects were moderate, suggesting the need for new studies to investigate the length of meditation per session, weekly frequency, and number of sessions performed, and evaluate new meditation techniques.

Psychophysiology has pointed out the close relationship between autonomic responses, such as respiratory and cardiovascular control, and the limbic system, demonstrating that breathing influences the control of emotions. In the case of the present study, they included stress, depression, and anxiety symptoms (Nemati, 2013; Brown et al., 2013; Novaes et al., 2020).

It is therefore suggested that the parasympathetic activation caused by meditation focused on breathing in three stages was able to promote the neuroplasticity of structures related to emotional regulation, alleviating anxiety and depression symptoms.

The Descending Hierarchical Classification analysis of the interviews and focus group meetings showed that meditation goes beyond the cognitive dimension, promoting significant physiological changes. The latter directly interfere with the mental flow, positively affecting the health-disease processes, quality of life and well-being, improving sleep, willingness to engage in daily activities and reducing pain and anxiety, stress, and depression symptoms.

These findings are reinforced by participant observation through the analysis of field diaries that initially described a silent, reluctant group of students. From the third meditation session onwards, they began to smile and engage in brief conversations with each other. By the sixth session, they spontaneously mentioned improvements in sleep, coupled with a reduction of chronotropic effects and lack of appetite, and greater overall well-being.

They gradually began to turn up at the meditation practice in a visibly better, livelier mood as if they had no more ailments. We observed a distinct change in their behavior, and they reported that they used the practice of focused breathing in three stages in their daily routine, particularly at times of stress, and shared it with family and friends.

González-Valero et al. (2019) point out that meditation, mindfulness programs, and cognitive-behavioral therapy can reduce stress, anxiety, and depression in schoolchildren. Ribeiro et al. (2019) mention improvements in the state of health and level of satisfaction after meditation, as well as in proprioception and the personal and collective behavior of adolescents. Pinto et al. (2023) observe that meditation practices in adolescents can be a valuable strategy for health promotion and educational training in the school environment.

School failure may be related to high levels of anxiety or emotional destabilization, especially when students regard school life as a decisive component in their lives, therefore making this environment a cause of psychological suffering (Rocha et al., 2022).

In addition, through participant observation, reports were obtained of parental pressure to excel academically and self-examination internalized by teenagers about the their future in the labor market. We also noticed the high level of discipline, the density of content coupled with less study and leisure time, as well as weaker teacher-student relationships.

Although academic performance was not directly assessed, some students reported improvements in their ability to concentrate, which warrants further exploration in future studies. In this context, the study by Yun et al. (2020) reports an improvement in self-reflection and academic attention in adolescents who meditate. Ribeiro et al. (2019) note that engaging in meditation at school can improve academic performance and positively affect the teacher-student relationship and collaborative work, in addition to reducing symptoms related to anxiety and stress.

Based on these results, we should regard school as being more than a place for knowledge acquisition and encourage this environment to help students overcome their difficulties and shortcomings in all areas of their lives. Meditation can be an accessible, low-cost instrument that promotes health and well-being for all educational actors, significantly enhancing school life.

Limitations of this study include the uncertainties of pedagogical intervention and acceptance during the period of implementing meditation practices; and prejudice regarding body-mind practices, especially in the school environment. Although this study was conducted with a large number of students, we cannot generalize findings to other school districts. This study only focused on the evaluation

of students. Other school actors, such as teachers and administrators, were not evaluated. In addition, a randomized design with a control group would allow the effects of meditation to be isolated, while analyzing samples by sex could clarify specific differences.

We believe that allowing teenagers to engage in meditation at school not only enables students to cope with common difficulties in this challenging phase of human development. It also helps their teachers, classmates, friends, family members, and others who are part of their social groups, thereby enhancing the health of the school community. In addition, engaging in meditation helps promote the mental health of these students through effective, accessible, and autonomous pedagogical action.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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Metric Properties of the *Infodemic Signs and Symptoms Scale* in Brazilian Older Adults

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ABSTRACT

Introduction. Infodemics promote disinformation, triggering serious consequences. It is therefore necessary to evaluate the phenomena associated with infodemics and their effects on mental health. **Objective.** Construct and analyze the internal structure validity and reliability of the *Infodemic Signs and Symptoms Scale* (ISSS) in older adults. The ISSS was designed to track signs and symptoms indicative of psychological distress associated with exposure to information on socially critical events. **Method.** This is a psychometric study of the construction and validation of a measurement instrument. To conduct the study, the ISSS was administered online (web survey) and by phone to 3,003 older adults from different regions of Brazil. **Results.** The instrument has good reliability (Cronbach's alpha = .97 and McDonald's omega = .97) and excellent replicability of the construct, as borne out by the GH index (latent = .982 and observed = .884). Evidence of the quality and efficacy of the measures showed high values for both the factor determination index (.991) and the EAP marginal reliability (.982), sensitivity rate (7.452) and expected percentage of actual differences (98%). **Discussion and conclusion.** The instrument analyzed in this study fills a gap, as there were no validated instruments for measuring the effects of infodemics on the mental health of older adults. The analyzed evidence indicates that the ISSS has good internal structure validity and reliability for measuring the signs and symptoms of infodemics in older adults. The instrument will assist in screening for the mental distress in older adults caused by infodemics in emergency crisis contexts.

Keywords: Psychological stress, infodemic, public health, mental health.

RESUMEN

Introducción. La infodemia favorece la desinformación, provocando graves consecuencias. Así, es necesario evaluar el fenómeno asociado a las infodemias y sus efectos en la salud mental de los individuos. **Objetivo.** Construir y analizar la validez y confiabilidad de la estructura interna de la Escala de Signos y Síntomas Infodémicos (ISSS) en adultos mayores; el ISSS fue diseñado para rastrear signos y síntomas indicativos de angustia psicológica asociada con la exposición a información sobre eventos socialmente críticos. **Método.** Se trata de un estudio psicométrico de la construcción y validación de un instrumento de medición. Para realizar el estudio, se aplicó el ISSS en línea (encuesta web) y por teléfono a 3 003 ancianos de diferentes regiones de Brasil. **Resultados.** El instrumento presenta buena confiabilidad (alfa de Cronbach = .97 y omega de McDonald = .97) y excelente replicabilidad del constructo, como lo evidencia el índice de GH (latente = .982 y observada = .884). La evidencia de la calidad y eficacia de las medidas mostró valores altos tanto para el índice de determinación de factores (.991) como para la confiabilidad marginal del EAP (.982), tasa de sensibilidad (7.452) y porcentaje esperado de diferencias verdaderas (98%). También hubo diferencias en la percepción de riesgo del consumo de marihuana, inhalables, alcohol y tabaco. **Discusión y conclusión.** El instrumento analizado aquí llena un vacío, ya que no existían instrumentos validados para medir los efectos de la infodemia en la salud mental de las personas mayores. La evidencia analizada indica que el ISSS tiene buena validez de estructura interna y confiabilidad para medir los signos y síntomas de infodemia en personas mayores. El instrumento ayudará a detectar la angustia mental en personas mayores causada por la infodemia en contextos de crisis de emergencia.

Palabras clave: Estrés psicológico, infodemia, salud pública, salud mental.

INTRODUCTION

In 2020, the world faced a serious public health crisis triggered by a novel coronavirus, SARS-CoV-2. The virus reached catastrophic proportions, spreading rapidly across six continents and causing majorsocial, economic, political, and health impacts (Jakovljevic, 2020). The pandemic exacerbated symptoms and psychological disorders such as loneliness (Van Tilburg et al., 2021), posttraumatic stress disorder (PTSD) (González-Sanguino et al., 2021), depression, and anxiety (González-Sanguino et al., 2021; Rettie & Daniels, 2021). The latter was even higher in at-risk groups for COVID-19, such as older adults (Rettie & Daniels, 2021).

The World Health Organization [WHO] (2021) recognized an infodemic as a potentially lethal response to the pandemic due to its catastrophic effects worldwide (Zarocostas, 2020). The term "infodemic" can be defined as an overload of information, regardless of whether it is true, related to a specific subject, making it difficult to obtain reliable sources and guidance, which increases exponentially in a short time (WHO, 2021).

In the age of digital information, infodemics are intensified by social networks, reaching a large number of people (Bridgman et al., 2020). Although patterns of information sharing on the internet have been studied for years, it was only with the COVID-19 pandemic that the first infodemic was recognized (Zarocostas, 2020). There is therefore still a dearth of evidence on the effects of this phenomenon on the population (Ahmad & Murad, 2020; Bridgman et al., 2020; Delgado et al., 2021). Nevertheless, it is known that sharing incorrect information encourages misinformation, triggering serious consequences such as death, xenophobia, discrimination, ideological polarization, and racism.

In Brazil, the political context compounded the pandemic scenario, leading to the emergence of conspiracy theories and misinterpretations of data. This scenario deteriorated as anti-science permeated the discourse and actions of certain government representatives. At this point, the repercussions of the infodemic on the mental health of older adults were evident. Studies conducted on the adult population revealed an increase in cases of depression associated with excessive information, as well as a recurrence of cases of depression caused by negative information on Covid-19 (Delgado et al., 2021; Kitamura et al., 2022).

The need to understand the effects of the infodemic on society goes beyond the current moment, as other infodemics are likely to emerge, linked to new epidemics, tragedies, terrorism, and climate catastrophes (Jakovljevic, 2020). It is therefore necessary to examine the phenomenon in detail.

Due to the lack of instruments for tracking or measuring symptoms and psychological disorders associated with infodemics, little is known about their effects on mental health. To explore this relationship, some studies have used instruments designed to assess psychological problems. These include those related to mental distress (*4-item Patient Health Questionnaire*, PHQ-4) and psychiatric disorders (*Generalized Anxiety Disorder Scale*—GAD-7), to associate the results with the infodemic. However, the use of instruments developed for the evaluation of other phenomena is suboptimal for the detection of infodemic disorder, leading to significant measurement problems. The infodemic should be evaluated using instruments specifically designed and validated for this purpose.

There is currently a lack of specific instruments to measure the effects of infodemics on the mental health of older adults. The objective of the present study was therefore to construct and analyze the internal structure validity and reliability of the Infodemic Signs and Symptoms Scale (ISSS) in older adults.

METHOD

This was a psychometric study of the construction and validation of a measurement instrument. The protocol was approved by the Human Research Ethics Committee (CEP Opinion No. 4,134,050) for national and international regulations for human research in a virtual setting. It is part of an international multicenter study currently under development, the "COVID-19 infodemic and its effects on the mental health of older adults during and after the pandemic: A multicenter study in Brazil/Chile/Peru/Colombia/Mexico and Portugal." It seeks to analyze the relationship between the COVID-19 infodemic and the mental health of older adults.

To conduct the study, the ISSS instrument was administered to 3,003 older adults (aged ≥ 60 years old) from various regions of Brazil who provided their informed consent. The sample size calculation was determined on the basis of the psychometric principles of sample composition, considering at least ten respondents per item in the instrument (Hair, 1998). To participate in the study, subjects had to be able to read and fill in the forms online or answer interviewers by telephone. Older adults who resided in a long-term care facility were excluded because institutionalization can contribute to the development or worsening of mental distress. Subjects who declared that they were unable to answer the questionnaire using digital media or even by phone were excluded, Questionnaires with blank fields were omitted from the analysis.

Data collection took place remotely between July 2020 and March 2021. Instruments were administered online (web survey) or by phone to include older adults with limited knowledge of or access to technology.

Potential participants were invited by a web survey link sent through social media (Whatsapp, Facebook and Instagram) and/or email and/or telephone, using the virtual

snowball strategy (Costa, 2018). To increase the representativeness of the sample, in addition the virtual snowball strategy, the link was shared with scientific societies of geriatrics and gerontology and retiree associations. In addition, phone calls were made to older adults, during which they were asked if they used social media. If so, they could choose whether to answer the questionnaire by telephone or to receive the link through social networks and/or e-mail.

Once they had accessed the link, older adults were asked to choose whether or not to accept the digital informed consent form (ICF). If a person preferred to participate in the study by telephone, they received an informed consent form from the researcher by email or social media. Only those who agreed to participate in the study had access to the web survey questions. At the end of the questionnaire, respondents were asked to forward or share a link with their network of contacts. After they had given their informed consent, they answered sociodemographic questions and questions related to the ISSS.

The ISSS was developed to track signs and symptoms of psychological distress associated with exposure to information about socially critical events (such as epidemics, terrorism and climate crisis). The ISSS was developed on the basis of the scientific literature on the main psychological problems and disorders caused or aggravated by pandemics and epidemics. These include stress (Czeisler et al., 2021; Shanahan et al., 2022), fear (Broche-Pérez et al., 2022; Dsouza et al., 2020; Fitzpatrick et al., 2020), and anxiety (Czeisler et al., 2021; Hou et al., 2020; Tang et al., 2021). Other aspects include substance abuse (Czeisler et al., 2021; Sun et al., 2020), depression (Czeisler et al., 2021; Hou et al., 2020; Tang et al., 2021) and suicidal ideation (Czeisler et al., 2021; Dsouza et al., 2020).

On the basis of the literature review, a 34-item scale was designed for older adults aged 60 years or over. Items are presented at random, and respondents are asked to indicate, either on their own or with the help of the interviewer, how often in the past fourteen days they experienced each of the signs or symptoms mentioned as a result of exposure to information about COVID-19. Items are measured on a four-point Likert-type scale (0—Never; 1—Rarely; 2—Sometimes; and 3— Often). The total score, calculated as the sum of the items, ranges from zero to 102. Higher scores indicate a greater burden of psychological distress. The cut-off point used was 67/68, considering the 95th percentile of the raw score.

The statement provided in the scale was: "In the past fourteen days, information on COVID-19 has affected me," and the thirty-four items given below. These include Lack of hope or pessimism; Cold sweat or chills; Irritation; Reluctance to carry out my daily activities; Fear of getting sick; Nervousness; Panic; Increased alcohol or tobacco use and Decreased desire for sex. Other items were Fear of dying; Digestive problems; Dry mouth; Lack of interest in daily activities; Lack of energy; Chest tightness; Concern; Use of illegal substances; Wish to die; Anxiety; Difficulty breathing; and Sadness. Still others include Non-specific fear; Discouragement; Anger; Trembling; Headache; Muscle aches; Sleep problems; Nutritional problems; Palpitation; Tiredness; Fear that loved ones (family, friends, etc.) will die; Use of psychotropic drugs (such as sleeping pills and/or anxiety) and Desire to be alone. The variables comprising the various dimensions are drawn from studies published during the pandemic. They measured and analyzed the impact of the infodemic on the mental health of the population, as well as a review study implemented and published by the research group.

The dependent variable was the total and per item ISSS score. For the characterization of the sample, age, gender, marital status, education, race/color, cohabitation and residential area, health services used, income and change in income during the pandemic were considered independent variables. To analyze the relationship between ISSS and other variables, the 15-item version of the Geriatric Depression Scale, (GDS-15) (Almeida & Almeida, 1999) and the Geriatric Anxiety Inventory (GAI) (Martiny et al., 2011; Massena, 2014) were administered.

The treatment procedures and descriptive data analyses were undertaken based on the sociodemographic characterization of the participants. Descriptive analyses were performed to characterize the sample, and results were reported as frequencies and measures of central tendency and distribution. Characterization analyses were performed using SPSS Statistics 23.

Following the validation steps, items were designed based on theoretical studies conducted by researchers at the multicenter study, which provided the opportunity to extract questions to create the scale. The Delphi method was used to validate the content, and the item bank was evaluated by experts from the multicenter project. Another phase comprised the pre-test, in which the older adult's understanding of the scale items was assessed. Approximately 80% of the older adults were drawn from research centers.

Evidence of the internal structure validity was obtained through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) using the Factor 12.03.01 software. EFA was performed using a polychoric correlation matrix (Gaskin & Happell, 2014). Measures of sample adequacy (Kaiser–Meyer–Olkin [KMO $\geq .70$] and Bartlett index values [$p < .05$]) were calculated to test the factorability of the itemset. Parallel analysis was used to test dimensionality using the optimal implementation of parallel analysis based on minimum rank factor analysis (Timmerman & Lorenzo-Seva, 2011) and permutation with 500 random correlations (Buja & Eyuboglu, 1992). Data extraction was performed using the robust unweighted least squares (RULS) method (Costello & Osborne, 2005) with promin rotation (Lorenzo-Seva & Ferrando, 2019) if unidimensionality was not

confirmed. The robustness of the test was determined from the association of a bootstrap with a sample extrapolation to 2,000 cases.

The goodness of fit of the model was analyzed based on the factor loadings (> .50) and communalities (> .40). The total explained variance (TEV) was set at 60% (Hair et al., 1998). In addition, unidimensionality evaluation indicators were adopted, namely, unidimensional congruence (UniCo) > .95, explained common variation (ECV) > .80 and mean of item residual absolute loadings (MIREAL) < .30 (Ferrando & Lorenzo-Seva, 2017).

The parameters and respective reference values adopted to determine the fit of the model in the CFA were the NNFI (non-normed fit index > .95), CFI (comparative fit index > .95), GFI (goodness-of-fit index > .95), AGFI (adjusted goodness-of-git index > .95), RMSEA (root mean square error of approximation < .08), RMSR (root mean square of residuals < .08) and WRMR (weighted root mean square residual < 1.0) (Sivo et al., 2006).

Cronbach's alpha and McDonald's omega indicators were used to determine the reliability of the scale, with values greater than .70 for both indicating reliability. The replicability of the construct was assessed using the GH Index (Generalized GH Index > .80) (Hair et al., 1998). The quality and effectiveness of the factor estimation was established using the factor determination index (FDI > .904), the EAP marginal reliability (>.80), the sensitivity rate (SR > 2) and the expected percentage of actual differences (> 90%) (Lorenzo-Seva & Van Ginkel, 2016). The 95% confidence intervals for the analyzed indicators are presented.

RESULTS

A total of 3,003 participants completed the survey, answering the thirty-four items in the scale. In most cases (n = 2293; 76.3%), the instruments were administered online (web survey). In 23.7% of cases, they were administered by phone (n = 711).

From the sample of 3,003 participants, psychometric analyses were performed based on eighty-eight observations per item of the instrument. All response options were ticked (min = 0, max = 3). The skewness (83402.1) and kurtosis (394.5) for all items met the distribution requirements to perform EFA and CFA, as did the sample adequacy indices, which showed good levels of factorability (KMO = .97; Bartlett's sphericity test df = 561 = 34421.7; p < .0001).

The parallel analysis indicated only one dimension in the instrument based on the 95th percentile, with a total explained variance of 60.8% of the latent variable. Unidimensionality was confirmed from the values obtained for the indicators UniCo (.984), ECV (.924) and MIREAL (.166). Factor loadings remained between .54 and .86 and the communalities remained above .40 for thirty-three of the thirty-four items. Although the communality of Item 8 was lower than the established cutoff, the item was not excluded due to its adequate factor loading and theoretical importance. Table 1 presents the global factor solution of the instrument.

Table 1
Global factorial solution of the instrument

	Factor solution	
Variable	*Factor*	*Communalities*
Item 1	.680	.463
Item 2	.761	.579
Item 3	.694	.482
Item 4	.799	.639
Item 5	.721	.520
Item 6	.830	.689
Item 7	.813	.661
Item 8	.540	.292
Item 9	.633	.401
Item 10	.718	.515
Item 11	.814	.662
Item 12	.793	.629
Item 13	.855	.732
Item 14	.861	.741
Item 15	.832	.692
Item 16	.753	.567
Item 17	.632	.399
Item 18	.744	.554
Item 19	.842	.710
Item 20	.790	.623
Item 21	.803	.645
Item 22	.835	.697
Item 23	.863	.745
Item 24	.664	.441
Item 25	.807	.651
Item 26	.769	.591
Item 27	.802	.643
Item 28	.821	.673
Item 29	.792	.627
Item 30	.830	.688
Item 31	.845	.714
Item 32	.690	.476
Item 33	.725	.526
Item 34	.709	.503

Source: the authors (2022).

The CFA results indicated a good fit of the model and an acceptable residual level.

Table 2
Goodness of fit of ISSS

	Values (95% CI)	
X^2	6975.188	(p = .0001)
GFI	.989	(.988 - .991)
AGFI	.989	(.987 - .990)
NNFI	.989	(.988 - .991)
CFI	.990	(.988 - .991)
RMSEA (I95% CI)	.062	(.0576 - .0651)
RMSR	.0644	(.060 - .067)
WRMR	.0697	(.065 - .073)

Note: X^2-chi-square test; GFI-goodness-of-fit index; AGFI-adjusted goodness-of-fit index; NNFI-nonstandardized fit index; CFI-comparative fit index; RMSEA-root mean square error of approximation; RMSR-root mean square of residuals; WRMR-weighted mean square root residual; 95% CI-95% confidence interval.

The instrument has good reliability (Cronbach's alpha = .97 and McDonald's omega = .97) and excellent replicability of the construct, as evidenced by the GH index (latent = .982 and observed = .884). Evidence of the quality and efficacy of the measures showed high values for the FDI (.991) and EAP marginal reliability (.982), sensitivity rate (7.452), and the expected percentage of actual differences (98%).

DISCUSSION AND CONCLUSION

The impact of crises, pandemics and disasters is marked by sudden, unexpected change, usually involving the loss of material, social, and emotional resources. This exacerbates the signs and symptoms of mental distress, leading to an inability to cope with emergency situations. In these situations, people tend to overestimate risks, become anxious and afraid and have difficulty dealing with and adapting to environmental stressors (Zwielewski et al., 2020).

Short-term exposure to epidemic or pandemic situations can cause somatic complaints arising from states of emotional lability, social relationship issues and isolation, sleep pattern problems, and other behavioral manifestations. In the long term, these stressors can lead to posttraumatic stress disorder, anxiety, depression, excessive alcohol use, panic disorder and other conditions detrimental to social functioning and mental health (de Cassia, 2020).

Regarding the infodemic phenomenon, during the COVID-19 pandemic, the elderly population became vulnerable to being the targets of disinformation. This vulnerability is linked to the quantitative increase in information because the older population does not always follow recommendations regarding checking information amid the profusion of inaccurate news. This can either be due to a lack of digital or health literacy, key to controlling belief in misinformation, anxiety, and emotional instability triggered by the information or to cognitive processes linked to these behaviors. Unaware that this is misinformation, older adults may also unwittingly serve as disseminators of fake news in the information environment (Yabrude et al., 2020; Kitamura et al., 2022).

In addition to the risk of exposure to misinformation, this media-fueled distress impacts mental health, as misinformation can exacerbate stress responses, fear, and depression and anxiety disorders (Yabrude et al., 2020). It is therefore necessary to mitigate the way infodemics affect the mental health of the older population. Hou et al. (2020) evaluated the levels of anxiety and depression in 4,827 Chinese people aged 18 years or older (M = 32.3; SD = 10.0; 18-85 years). They associated the results with the frequency of exposure to news and information about COVID-19 on social networks in the previous week. Eighty-two percent of participants had been frequently exposed to information on social networks, which was associated with a high risk of clinically significant anxiety and combined depression and anxiety.

Riehm et al. (2020) conducted a study of over 6,000 US adults (M = 48.8; SD = .8 years). The results showed that the increase in time spent on social media and consulting traditional media sources (such as television, radio, and newspaper) to learn about COVID-19 were independently associated with increased mental stress.

Similarly, Sigurvinsdottir et al. (2020) found that the search for information on the pandemic on the internet was associated with more stress in participants. Importantly, the methodology used in the study did not make it possible to determine whether the search for information causes psychological symptoms or whether individuals experiencing negative feelings seek information, creating a type of feedback loop (Sigurvinsdottir et al., 202).

A study by Jungmann and Witthöft (2020) of German subjects (N = 1,615; M = 33.36 years; SD = 13.18) found a negative correlation between being informed about the pandemic and anxiety about the virus. For the authors, adaptive emotion regulation was a key moderator of this relationship. In contrast, pandemic cyberchondria (repeated and/or excessive internet searches related to the COVID-19 pandemic) was positively correlated with anxiety.

A study by Elhai et al. (2020) of 908 Chinese subjects (M = 40.37 years; SD = 9.27; 17-64 years) was conducted using standard instruments such as the *Depression Anxiety Stress Scale-21* (DASS-21) and the *Smartphone Addiction Scale – Short Version* (SAS-SV) adapted to the context of the pandemic. *The Generalized Anxiety Disorder Scale-7* (GAD-7), for example, was adapted by the authors for COVID-19 anxiety by providing the following context: "Over the last two weeks, how often have you been bothered by the following problems because of the coronavirus outbreak?" In addition, items assessing exposure to COVID-19 news were used. Among other results, Elhai et al. (2020)

found that 11.67% had moderate depression, and 3.74% severe depression. 24.12% had moderate anxiety, and 6.83% severe anxiety; 7.93% had moderate COVID-19 anxiety and 2.64% severe COVID-19 anxiety; while 51.98% had problematic smartphone use. COVID-19 anxiety was positively correlated with depression and problematic smartphone use.

In this context, Kwiecinski (2019) analyzed the impact of information technologies. They assessed the levels of infoxication and nomophobia of higher education students through an analysis of concepts and foundations about infoxication and nomophobia, creating a psychometric scale to measure their levels in students. For this purpose, a mixed method study was conducted on the methodological development of the construction and validation of the psychometric instrument *Psychometric Scale to Identify Levels of Infoxication and Nomophobia* (Portuguese acronym EPININ).

The present study fills a gap, as there were no validated instruments for measuring the effects of infodemics on the mental health of older adults. The analyzed evidence indicates that the ISSS has good internal structure validity and reliability for measuring the signs and symptoms of infodemics in older adults. The set of thirty-four items, belonging to a single dimension, explains 60.8% of the phenomenon. The factor solution found shows good structure and a good fit. The analyses were performed using a contemporary theoretical model with robust techniques. It will be necessary to study the instrument further to refine the contents of the items with regard to the way they were constructed.

The instrument will assist in screening for mental distress in older adults caused by infodemics in emergency crisis contexts.

A brief version could be designed to optimize the applicability of the scale, The inclusion of lengthy instruments in comprehensive geriatric assessments (CGAs) could limit their use in practice and create biases due to items left blank by the participants.

One limitation of the study is the use of a web-based survey, leaving out a significant portion of people without access to the internet or social media, creating selection bias. The profile of the subjects displays certain characteristics mentioned above. These are not typical of the Brazilian population and could be interpreted as socioeconomic variables that protect against mental illness.

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Conflicts of interest

None to declare.

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"I lost everything because of crystal": Psychosocial and Familial Consequences of Methamphetamine Use

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ABSTRACT

Introduction. The use of crystal meth, an extremely addictive variant of methamphetamine, currently represents one of the most severe public health issues in Mexico. This substance not only affects the physical and mental health of those using it but also causes serious repercussions within their family and social environments, exacerbating conflicts, ruptures, and situations of vulnerability. **Objective.** To explore and describe experiences related to crystal meth use from the perspectives of users, their families, and healthcare professionals, to understand the meanings attributed to these experiences and their psychosocial and familial implications. **Method.** Using an interpretative phenomenological approach, in-depth interviews were conducted with twenty-one crystal meth users, fifteen family members, and twenty-four healthcare professionals. **Results.** The consequences of crystal meth use manifest in three main areas: 1) Social dynamics: increased involvement in criminal activities, stigmatization, and social isolation; 2) Family impact: intense conflicts, relationship breakdowns, impact on children, jealousy and partner violence, domestic violence, and financial difficulties; 3) Health effects: significant physical deterioration, withdrawal symptoms, mental health issues, and extreme behaviors. These consequences not only affect the physical and mental health of users but also exacerbate their social isolation and marginalization. **Discussion and conclusion.** It is important to implement interventions to reduce social and familial consequences, in addition to the physical and mental results affecting users and their families. It is also essential to design non-stigmatized interventions to minimize the risks of relapse and promote social reintegration.

Keywords: Crystal meth use, psychosocial consequences, familial consequences, physical consequences, mental consequences.

RESUMEN

Introducción. El consumo de cristal, una variante extremadamente adictiva de metanfetamina, representa actualmente una de las problemáticas de salud pública más graves en México. Esta sustancia no solo afecta la salud física y mental de quienes la consumen, sino que también genera serias repercusiones en sus entornos familiares y sociales, exacerbando conflictos, rupturas y situaciones de vulnerabilidad. **Objetivo.** Explorar y describir las experiencias relacionadas con el consumo de cristal, desde las perspectivas de los usuarios, sus familias y los profesionales de la salud, con el fin de comprender los significados atribuidos a dichas experiencias y sus implicaciones psicosociales y familiares. **Método.** Mediante un enfoque fenomenológico interpretativo, se realizaron entrevistas en profundidad con 21 personas usuarias, 15 familiares y 24 profesionales de la salud. **Resultados.** Las consecuencias del consumo de cristal se manifiestan en tres áreas principales: 1) Alteración en las dinámicas sociales: aumento en la participación en actividades delictivas, estigmatización y aislamiento social; 2) Impacto familiar: conflictos intensos, ruptura de relaciones, impacto en los hijos, pareja y celotipia, violencia doméstica y dificultades económicas; 3) Efectos en la salud: deterioro físico significativo, síndrome de abstinencia, problemas de salud mental y conductas extremas. Estas consecuencias afectan la salud física y mental de las personas usuarias y agravan su aislamiento social. **Discusión y conclusión.** Es importante realizar intervenciones que permitan disminuir las consecuencias sociales, familiares, además de las consecuencias físicas y mentales que afectan a las personas usuarias y que impactan también a su familia; generando intervenciones sin estigma que minimicen los riesgos de recaídas y promuevan la reintegración social.

Palabras clave: Consumo de cristal, consecuencias psicosociales, consecuencias familiares, consecuencias físicas, consecuencias mentales.

INTRODUCTION

The use of crystal meth, a potent variant of methamphetamine, represents a significant public health issue, severely impacting users, their families, and the broader social environment. Methamphetamine use has risen dramatically worldwide, with the United Nations Office on Drugs and Crime ([UNODC], 2023) reporting it as one of the most used synthetic drugs, affecting millions worldwide. According to the Basic Community Study (*Estudio Básico de Comunidad Objetivo* (Spanish acronym EBCO, 2018), .9% of the Mexican population aged 12 to 65 uses methamphetamines, making it the third most widely consumed illegal drug. Despite the global urgency of addressing methamphetamine use, it is essential to understand its localized impact in Mexico, where structural and cultural factors, such as economic disparities, limited access to healthcare, and social stigma, exacerbate the problem.

Crystal meth is highly addictive, affordable, and easily accessible (National Institute on Drug Abuse [NIDA], 2023; Winslow et al., 2007), leading to rapid addiction and almost immediate negative consequences. The impact of crystal meth extends to the user's family and social environment, exacerbating domestic violence and familial conflicts, especially in close relationships (Semple et al., 2009; Sommers et al., 2006). Some studies have found that meth use not only affects users, but also their families, extending stigma to them as well, which not only affects the user's environment but also increases their marginalization and legal problems (Sampson et al., 2023). Additionally, children exposed to environments where crystal meth is consumed are at greater risk of developmental problems (Lineberry & Bostwick, 2006), particularly when consumption occurs during pregnancy (Dinger et al., 2017). One study revealed that young people exposed to familial crystal meth use are likely to begin using the drug at an early age, with many being introduced to it by family members (Chomchoei et al., 2019). Crystal meth use is also linked to increased involvement in criminal activities, including theft and violent crimes (McKetin et al., 2020).

Other studies detail the devastating consequences of crystal meth use, highlighting the interconnectedness of social, psychological, and emotional impacts. Users experienced significant physical and mental health issues, including malnutrition, paranoia, psychosis, and cardiovascular problems (O'Brien et al., 2008), as well as the loss of significant family relationships during the active period of consumption and recovery (Vandermause, 2012).

At the same time, cognitive and physical effects of crystal meth use include cognitive impairment, cardiovascular problems, liver and kidney damage, and a high risk of relapse. Users experience a rush or rapid onset of euphoria, heightened libido, increased energy and attention, together with appetite suppression, insomnia, and skin lesions (Watanabe-Galloway et al., 2009). Long-term use can result in irreversible neurological damage, cardiac issues, and psychiatric conditions such as anxiety, depression, psychosis, and suicidal ideation (Meredith et al., 2005; Winslow et al., 2007).

Abrupt cessation of crystal meth use triggers acute withdrawal syndrome characterized by symptoms such as anxiety, fatigue, intense cravings, and sleep disturbance, which can persist for up to four weeks. Factors such as frequent use, injecting drug consumption, female gender, and residential treatment exacerbate these symptoms (Mancino et al., 2011; Zhao et al., 2021). Despite its severe consequences, fewer than 20% of users receive treatment, and only 27% of women using drugs receive care (UNODC, 2023).

Although there are numerous quantitative studies on the effects of methamphetamine use, few adopt a qualitative perspective or include insights from family members or professionals working closely with users. Examples include studies such as the one by Brookfield et al. (2022) emphasizing the nuanced trajectories of people using crystal meth. This study challenges the binary framework of addiction and recovery by exploring how individuals navigate complex social and health systems without necessarily achieving abstinence. Fockele et al. (2023) examine the shifting motivations behind crystal meth use, highlighting issues such as initial social enhancement that transitions to isolation and health crises, providing critical insights for healthcare interventions. Silverstein et al., 2021 report the self-management practices of crystal meth use among individuals with opioid dependence, underscoring its role in mitigating withdrawal symptoms and highlighting the intricate balance between perceived benefits and risks.

This qualitative approach complements understanding of the phenomenon by exploring the direct experiences and perceptions of those around users, thereby improving intervention strategies, as has been recognized in other studies (see Vandermause, 2012). The present study aims to explore the experiences related to crystal meth use from the perspective of users, their families, and healthcare professionals, to understand the meanings attributed to these experiences and their psychosocial and familial implications. By integrating these perspectives, the study seeks to enrich current knowledge, aligning prevention and treatment strategies with the actual needs of those affected, while providing a solid foundation for future research.

METHOD

Study design

The research employed a qualitative approach based on interpretative phenomenology (Smith et al., 2009), essential for delving into the lived experiences of crystal meth

users, their families, and healthcare professionals. Husserl's phenomenology (2012) further enabled the understanding of the meaning of these experiences within a broader context. The study was conducted from March 2022 to October 2023, during which in-depth interviews were conducted with those taking part.

Participants

Study subjects were selected intentionally and homogeneously, following the guidelines of Smith and Osborn (2008), to represent diverse experiences related to crystal

Table 1
Characteristics of participants

Participant code	*Gender*	*Age*	*Marital status*	*Education*	*Occupation*
U1	M	30	Married	Middle School	Construction Worker
U2	M	22	Single	Middle School	Retailer
U3	F	18	Divorced	Middle School	Unemployed
U4	F	39	Divorced	Middle School	Cleaner
U5	M	22	Cohabiting	High School	Construction Worker
U6	M	19	Single	Elementary School	Construction Worker
U7	M	29	Single	Middle School	Factory Worker
U8	M	17	Single	Middle School	Retailer
U9	M	33	Divorced	Middle School	Factory Worker
U10	M	37	Divorced	High School	Construction Worker
U11	M	35	Divorced	Middle School	Factory Worker
U12	M	19	Cohabiting	Middle School	Factory Worker
U13	M	41	Cohabiting	Middle School	Retailer
U14	M	12	Single	Elementary School	Unemployed
U15	M	14	Single	Elementary School	Construction Worker
U16	M	30	Single	Middle School	Unemployed
U17	M	26	Single	High School	Construction Worker
U18	M	43	Single	High School	Retailer
U19	M	24	Single	High School	Unemployed
U20	M	29	Married	Middle School	Unemployed
U21	M	25	Single	Middle School	Unemployed

Table 2
Family members

Participant code	*Relationship*
F1	Parents
F2	Partner
F3	Parents
F4	Parents
F5	Parents
F6	Parents
F7	Parents
F8	Sibling
F9	Parents
F10	Partner
F11	Parents
F12	Sibling
F13	Parents
F14	Parents
F15	Parents

Table 3
Characteristics of health professionals interviewed

Participant code	*Gender*	*Occupation*	*Years of experience*
HP1	F	Psychologist	5-10
HP2	M	Psychologist	5-10
HP3	M	Psychologist	11+
HP4	F	Psychologist	11+
HP5	F	Psychologist	11+
HP6	F	Psychologist	0-5
HP7	M	Psychologist	0-5
HP8	F	Psychologist	11+
HP9	F	Manager	5-10
HP10	F	Psychologist	5-10
HP11	F	Psychologist	11+
HP12	M	Counselor	0-5
HP13	M	Counselor	0-5
HP14	F	Psychologist	5-10
HP15	F	Psychologist	0-5
HP16	M	Psychologist	5-10
HP17	M	Psychologist	11+
HP18	F	Psychologist	0-5
HP19	M	Psychologist	5-10
HP20	M	Psychologist	11+
HP21	F	Psychologist	11+
HP22	F	Psychologist	11+
HP23	M	Psychologist	11+
HP24	F	Psychologist	0-5

meth use. A total of twenty-one individuals (nineteen men and two women) undergoing residential treatment were interviewed. The inclusion criteria required participants to be over 18 years old, have crystal meth as their primary substance of abuse, and have provided informed consent. Comorbid health conditions related to substance use were not considered as exclusion criteria. The lower participation of women reflects their limited presence in these treatments, which are largely designed for men. Table 1 shows their main characteristics.

The fifteen family members interviewed were direct relatives (mothers, fathers, siblings, or partners) of those in treatment. Table 2 shows the relationship between users and their family members.

Additionally, healthcare professionals, including psychologists and therapists from the Community Mental Health and Addiction Centers (CECOSAMA) in Aguascalientes, were chosen based on their experience treating crystal meth users, providing a comprehensive perspective. Table 3 shows their main characteristics.

Data collection, procedure and techniques

Open interviews were used as the primary data collection method, targeting three key groups: crystal meth users, family members, and healthcare professionals. They were designed to obtain detailed insights and perspectives from each group on crystal meth use.

The interviews for crystal meth users covered a range of topics, starting with personal data collection, followed by an exploration of their drug use history and lived experiences related to meth use. They also investigated the physical, psychological, and social consequences of consumption, as well as the connection between drug use and suicidal ideation, through questions such as What familial and personal consequences has your use caused? The interviews also investigated the immediate and long-term effects on their daily lives and their efforts to seek care services.

For family members of crystal meth users, the interviews focused on their insights into their loved one's substance use, their understanding of the user's consumption history, and their experiences in seeking treatment services. Questions included What has your experience been like with a family member who uses crystal meth? and Is there a history of substance use among other family members? These topics facilitated the exploration of the impact of crystal meth use on family dynamics and the challenges of accessing treatment services.

As for healthcare professionals, the interviews focused on their clinical observations and knowledge of crystal meth use. Questions addressed the reasons behind the onset of drug use, the psychological care process provided to users, and the consequences observed in their patients. Interviews also explored barriers to accessing treatment services.

Interviews with users and family members were conducted at three residential centers in Aguascalientes, selected for their expertise in treating crystal meth users. In contrast, interviews with healthcare professionals were conducted at their workplaces, with some undertaken online.

Analysis

Interviews were audio-recorded. The subsequent data analysis followed the seven steps of Interpretative Phenomenological Analysis (IPA) (Smith et al., 2009): transcribing interviews, conducting multiple readings to become familiar with the content, and identifying significant ideas through annotations. Based on these annotations, emergent themes were generated, and their interrelationships analyzed. This process, repeated for each individual case, allowed for the identification of common patterns across the cases analyzed. Guided by the principles of Husserl's phenomenology (2012), this approach prioritized the understanding of lived experiences and the meanings attributed to them, incorporating perspectives from users, family members, and healthcare professionals. Results were presented narratively, supported by representative quotations, enabling the structuring of interpretative categories and offering a holistic understanding of the phenomenon.

Data collection ceased once 'data saturation' was achieved when responses became repetitive (Strauss & Corbin, 2002). Additionally, Atlas.Ti was used to support the coding and organization of the narratives. Each transcript was imported into the software, where initial codes were identified through a detailed reading of the interviews. The codes were subsequently grouped into categories and subcategories, following the principles of interpretative phenomenology.

Data triangulation, comparing the experiences of users, family members, and professionals, reinforced the reliability of the analysis. Experts reviewed the validity of the process by evaluating the relevance of the interviews.

Ethical considerations

Before each interview, the purpose of the research was explained, and informed consent obtained. Participants were informed that their autonomy and confidentiality would be ensured and that they could withdraw their consent at any time. They were told that the information collected would be used exclusively by the research team, in keeping with the ethical standards of the *Universidad Autónoma de Aguascalientes*. The research protocol was approved by the Institutional Bioethics Committee of the Universidad Autónoma de Aguascalientes, with CIB-UAA-32.

RESULTS

The interpretation of results was based on Husserl's phenomenological perspective, which seeks to understand lived experiences from the point of view of participants. Interview testimonials revealed diverse perspectives on the consequences of crystal meth use in the lives of users and their relationships. The results presented here derive from the IPA conducted following the steps outlined by Smith et al. (2009), ensuring rigorous interpretation of participants' narratives. The analysis was organized into three main categories: disruption of social dynamics, family impact, and physical and mental health effects. Table 4 shows the main categories and themes.

Table 4
Main categories and themes

Main category	*Theme*
Disruption of social dynamics	Criminal behaviors
	Stigma and social rejection
	Social isolation
Family impact	Family breakdown
	Impact on children
	Partner relationships and jealous delusions
	Violence
	Economic difficulties
Physical and mental effects	Physical deterioration and "*La malilla*"
	Mental health
	Extreme behaviors

Disruption of social dynamics

This category examines the social impact of crystal meth use, revealing disruptions in interpersonal dynamics through isolation, stigma, and conflict. These effects, described by users, family members, and the broader social environment, weaken connections and affect both users and those around them.

Criminal behaviors

Theft is the most common criminal behavior among crystal meth users, underscoring the severity of their dependence: *"I would get desperate and do whatever it took to get more drugs, I'd steal from my mom, my sister ..."* (U8). Crimes range from stealing personal belongings to vehicles, from both family members and strangers: *"I ended up stealing the blender from my house to pawn it for more drugs ..."* (U17). These accounts demonstrate the lengths users are willing to go to maintain their drug use.

Family members and health professionals also describe the seriousness of these thefts: *"He destroyed everything... material things that don't matter, but ... the ones most hurt were us ..."* (FAM). Dependency erodes family trust and creates insecurity: *"It's disappointing because ... a son, stealing from his own mother ..."* (FAM).

Crystal meth use is also associated with other criminal activities, such as drug possession and carrying weapons: *"I would show up with a knife and scare elderly people ... it made me really sad to prey on the weakest"* (U14). Drug dealing and extortion are also common:

"They end up getting involved in other criminal activities to get crystal" (HP). Additionally, fights and even homicides were reported: *"I was responsible for ... well, to put it bluntly, I was in responsible for ... taking people's lives"* (U19). These behaviors illustrate the complexity of the social and criminal ramifications linked to crystal meth use, revealing a cycle of dependency, criminal association, and participation in illegal activities to sustain their drug habit.

The physical and psychological effects of crystal meth drive criminal behaviors. The urge to avoid withdrawal syndrome, combined with cognitive impairment and disorders such as depression and anxiety, heightens desperation and impulsivity, leading users to commit theft to obtain the drug and relieve discomfort. *"They are capable of stealing or borrowing under false pretenses just to get their dose and calm down ..."* (PS). As a result of these crimes, crystal meth users may face severe legal consequences, such as imprisonment, profoundly impacting both their lives and those of their families.

Stigma and social rejection

Stigma and social rejection are significant consequences of crystal meth use, impacting daily life, family relationships, and reintegration processes. Users face discriminatory attitudes, ranging from contemptuous looks to workplace exclusion: *"It's not the same asking for a job when you're thin as when you're healthy... because the drug makes you look really worn out ..."* (U16). This stigma also affects their access to and retention in treatment programs.

The impact of stigma extends beyond users to their families, who suffer from shame and isolation: *"My father gets angry and says I'm giving the family a bad name ..."* (U6). Families endure additional pain from being stigmatized: *"People would say, 'Hey, they took your son in the patrol car.' That hurt me, but I would go to the bathroom to cry and then come back as if nothing had happened"* (FAM). Stigma can sever family ties and hinder access to support networks.

Stigma not only perpetuates social exclusion but also prevents access to opportunities and treatment, prolonging addiction and increasing the risk of complications: *"They already come marked, labeled, categorized by the society we live in ..."* (HP). For women, the dual stigma of being a drug user exacerbates barriers to seeking help: *"Even though there are women who use, the fact that they are*

labeled or carry this stigma or stereotype ... means that fewer of them seek help or care ..." (HP). This makes it even more challenging for women to access the necessary resources for recovery.

Social isolation

The stigma associated with crystal meth use and the resulting criminal behaviors lead to social isolation. This isolation increases marginalization, depriving users of the necessary support for rehabilitation and social reintegration. It also limits their access to healthcare services and employment, increasing their vulnerability and dependence on crystal meth. Aware of society's negative perception, users tend to distance themselves from family and friends, leading to a loss of emotional connections and growing loneliness: *"I no longer knew how to socialize. I started to distance myself ... "* (CMU). Another user noted: *"I no longer cared about my job or people; I started distancing myself. That addiction drove everyone around me away and made me completely dependent because I couldn't imagine a day without that drug"* (U10).

The sense of loneliness intensifies as they detach from their support networks, with the drug becoming their only companion, worsening their dependency: *"I no longer cared about my family, whether they ate or not, they got in the way of me getting high ... "* (U15).

Family impact

Crystal meth use severely affects family relationships, leading to constant conflicts, domestic violence, and, in many cases, the dissolution of the family unit. The interviews reveal how family cohesion and stability are weakened, impacting both users and their loved ones, who become trapped in a cycle of tension and disintegration. This situation damages the emotional and psychological well-being of all family members, worsening relationships and contributing to a toxic family environment.

Family breakdown

Family breakdown is a direct consequence of crystal meth use, as highlighted in the narratives describing how substance use leads to criminal behavior and causes personality changes in users, eroding trust and emotional connections within the family. One user shared, *"I have lost so much, including my family and my wife. Everything fell apart because of my use"* (U9). This situation creates stress, anxiety, and depression, affecting the emotional well-being of all family members, particularly children, and hampering the ability to maintain healthy long-term relationships: *"you don't do drugs, but it feels like you do, because they don't sleep and they don't let you sleep either ..."* (FAM).

Impact on children

A key concern highlighted in the analysis is the significant impact of crystal methamphetamine use on children in affected families. Younger family members experience serious emotional and psychological consequences as they witness firsthand the challenges and disruptions arising in a household affected by substance use. Children are often exposed to difficult situations, such as the emotional neglect of parents, which harms their well-being and development. *"That drug made me indifferent because I would see the tears of my children when they found out I was an addict, and it didn't bother me..."* (U4).

The impact on children is evident: *"My little girl would cry when I left her alone. Now it hurts me to think about everything I put her through while I was out looking for more crystal"* (U13). Crystal meth addiction creates an unstable family environment filled with conflict and anxiety, severely affecting children's mental health. Children in these settings often experience high levels of stress and emotional distress, with long-term repercussions on their psychological development. As one user explains: *"My daughter would say: 'Mom, I remember the mom who made us soup and stayed with us, but you're not the same anymore. Now you're just thinking about that crystal that I hate because we lost you because of that drug, mom'"* (U4). The lack of support and stability exacerbates these issues, affecting children's emotional and educational development.

Partner relationships and jealous delusions

Crystal meth consumption severely damages romantic relationships, intensifying jealousy and domestic violence. The drug exacerbates paranoia about infidelity, leading to conflict and emotional distance, and eroding trust between partners: *"I ruined everything. I put my wife through torture for three years..."* (U1). Crystal users often experience obsessive thoughts of betrayal, creating tension through irrational beliefs, such as imagining that someone is hidden in their surroundings during intimate moments: *"I thought someone was inside the mattress while we were having sex, that someone was hiding... I grabbed a knife and threatened him and destroyed the entire mattress..."* (U18).

This constant paranoia triggers a cycle of distrust, gradually eroding emotional connection and intensifying conflicts. Jealous delusions also lead to controlling behaviors, restricting the partner's freedom and fostering an oppressive atmosphere: *"It's very common for them to have delusional jealousy (...) they become much more aggressive..."* (HP). These behaviors, driven by insecurity, make both the relationship and treatment more difficult to manage.

Violence

Domestic violence, one of the most severe consequences of crystal meth use, directly endangers the safety of household members. Crystal meth use increases aggression and impulsivity, leading to episodes of physical, verbal, emotional, and sexual violence. Examples include knife attacks and sexual coercion: *"I attacked him many times, once with a knife. We struggled because he said he wanted to kill himself, and I started struggling with him, and we both got cut, but nothing more happened. I hit him many times; I forced him to be with me in bed, even though he didn't want to ... "* (U18). Crystal users can become impulsive and dangerous, posing a serious threat to their families.

The unpredictability of the user's violent behavior creates a constant atmosphere of anxiety in the home: *"I was scared, I looked at him, and his expression ... it wasn't him"* (FAM). Emotional and verbal abuse, alongside physical violence, destabilizes the family emotionally. This fear often prevents relatives from seeking help or taking action to admit their loved one to a treatment facility, perpetuating the cycle of abuse: *"I'm his mother, he has to respect me' ... .That was my mentality, but I was scared because ... I could see him becoming more aggressive. I could see him becoming more violent. I would say something, and he would start hitting me ..."* (FAM).

Financial difficulties

Crystal meth use is associated with compulsive spending that places a significant financial burden on families. A family member shared the following: *"He would leave all day from the morning ... until 10 at night, and return with no money, no earnings, and would only have something to consume ..."* (FAM)

Excessive use prioritizes purchasing the substance over essential needs such as food, housing, and education: *"I threw my family out on the streets ... with nothing. I started selling all my things ... "* (U11).

This ongoing cycle of financial stress damages the family's quality of life. In addition, employment becomes both a means of financing the addiction and a justification to continue consuming, exacerbating the economic strain: *"what hurt me the most was leaving my kids without food, and I had to keep feeding that drug to be able to work ... "* (U4).

Physical and mental effects

This category examines how participants experience the effects of crystal meth use on their physical and mental health. These range from severe health problems to extreme behaviors designed to fund their drug habit. The experiences recorded provide a comprehensive view of how crystal meth consumption impacts both the health and everyday lives of users.

Physical deterioration and withdrawal syndrome

Crystal meth use causes significant physical consequences, including extreme weight loss, dental problems, and overall health deterioration. Withdrawal syndrome involves severe symptoms such as body aches, insomnia, and extreme fatigue, disrupting users' daily lives. Personal neglect is common, with long periods of poor hygiene: *"I went up to two months without showering"* (U12). Appetite suppression leads to malnutrition, as reflected in testimonials of drastic weight loss: *"I lost almost 30 kilos. I got here weighing 65 kilos because I stopped eating and spent all my time using drugs"* (U20).

Another frequent symptom is intense itching, prompting users to scratch compulsively, often until they bleed, providing a sense of relief: *"it feels like bugs are crawling on me, and I start scratching, and I scratch until I see blood, it gives me satisfaction ... "* (U2). Both users and health professionals report effects such as tooth loss, insomnia, and skin lesions, all indicative of prolonged crystal meth use.

Withdrawal syndrome is devastating, causing agitation, extreme fatigue, and such intense discomfort that users often continue consuming to avoid these symptoms: *"I felt very sick, I couldn't get out of bed ..."* (U21). Health professionals confirm that, over time, users no longer seek the pleasurable effects of crystal meth but rather aim to avoid the distress of withdrawal: *"the pleasurable effect is no longer as important as avoiding the discomfort they feel from withdrawal ..."* (HP).

Mental health

Finally, the analysis of the interviews highlights the severe psychological consequences of crystal meth use, including a significant increase in anxiety, depression, delusions, and suicidal ideation. These issues not only affect emotional well-being but can also trigger dangerous, self-destructive behaviors, underscoring the profound impact of this substance on the mental health of users.

Crystal meth induces an intense release of dopamine, causing moments of euphoria that are quickly followed by deep depression, creating an unstable emotional cycle. This cycle heightens the psychological vulnerability of users, leading them to isolate themselves and experience drastic changes in behavior and relationships, as expressed in one testimonial: *"I would hide, like I just wanted to be in a room getting high, I stopped seeing my family and that's what triggered my depression ... "* (U3).

The interviewees described the anxiety triggered by crystal meth use as a constant worry, extreme tension, and

a feeling of emotional collapse. This anxiety, closely linked to the substance, severely impacts their daily lives, paralyzing them and complicating their ability to cope with everyday situations and remain in treatment.

Depression is another significant consequence of crystal meth use, marked by profound sadness, hopelessness, and loss of interest in daily activities. This decreases motivation and quality of life, hampering recovery. In the most severe cases, depression can lead to suicidal ideation, with persistent thoughts of self-harm: *"through crystal, I lost everything, I even lost the will to live. That drug steals everything, for me, personally, it mainly stole my dreams, my hopes, my will to live ... "* (U4).

In addition to emotional effects, prolonged crystal meth use can lead to serious mental health problems, such as visual and auditory delusions. Users report seeing non-existent images, which distort their perception of reality and can trigger dangerous behaviors: *"I started hallucinating about the devil ..."* (U19). These hallucinations create constant confusion and fear, making it difficult to distinguish between what is real and imagined, heightening their sense of danger: *"the trees seemed like people with guns. I would go anywhere, and I thought they were following me ..."* (U17). Another participant added: *"I lost control of myself. I no longer slept, I didn't eat, and I spent the whole day in delirium and hallucinations"* (U22).

Auditory delusions also significantly impact psychological well-being: *"they start having delusions, feeling like they're being studied, that they're being watched, that cameras are being put on them ... but more than anything, anxiety is very common, and obviously it has to do with withdrawal-related anxiety ..."* (HP). Users believe they hear voices or non-existent sounds, which leads to paranoia and defensive reactions: *"I felt like they were talking to me ... I would look out the window to see who was there, but it was all in my head..."* (U10). These delusions increase anxiety, making the recovery process even more challenging.

Another significant consequence is sleep disruption, which leads to irritability and difficulty concentrating. Users can go for days without sleep and only manage brief rest when fatigue becomes extreme, affecting their work performance and daily life. Additionally, their family members also experience disruptions of their own rest due to the erratic behaviors of the user: *"they didn't sleep, and they didn't let us sleep, because they were constantly coming and going ..."* (FAM).

Extreme behaviors

The desperate need to sustain crystal meth use drives some users to engage in extreme behaviors, one of the most frequently mentioned in the interviews being searching through garbage containers, reflecting personal deterioration and loss of dignity. The interviews reveal that, when unable to finance their addiction, users resort to collecting recyclable materials or food from the trash: *"I ended up in the garbage, rummaging through dumpsters, gathering things ..."* (U7). This behavior highlights the profound impact of crystal meth use on daily life and the self-image of users.

The personal neglect associated with these behaviors is striking: *"I started going through dumpsters, eating from dumpsters. I neglected myself; I actually went up to two months without bathing"* (U12). Family members also suffer the consequences of these behaviors, witnessing how addiction transforms their loved ones, causing distress and shame. *"He works, but sometimes he loses it with meth. It's like it all rebounds on him, and he spends days out in the streets dumpster diving without getting any sleep..."* (FAM).

To effectively address crystal meth use, it is crucial to consider the social, familial, and personal consequences it causes. Given the rapid onset and severity of the effects of this substance, early intervention addressing these three areas is essential for improving treatment strategies.

DISCUSSION AND CONCLUSION

This study explored and described the experiences of crystal meth users, their family members, and health professionals to understand the consequences of consumption on their lives and relationships. The results show that the consumption of crystal meth not only affects users but also their families and those around them. The consequences of crystal meth use are diverse and wide-ranging. They include social impacts such as criminal behavior, stigma, and rejection, which often lead to users' social isolation. In the family context, the impact extends to children, partners, and other close relatives, while users also face significant financial, physical, and mental challenges.

Social consequences are closely tied to criminal behaviors such as theft, drug possession, carrying weapons, and drug dealing. These actions not only harm the users' environment but also exacerbate their marginalization and legal problems, causing insecurity and anxiety among family members. Similar findings were observed in the study by Asante & Lentoor (2017) analyzing the experiences of South African mothers of young methamphetamine users. Sampson et al. (2023) also noted, as in our study, that families and friends of methamphetamine users experience significant frustration and sadness. These emotions not only stem from lifestyle changes but also from the psychological and financial distress caused by users' involvement in criminal activities.

Social stigma associated with methamphetamine use often leads to social isolation, not only for the user but also for their family members. This isolation may be linked to the direct consequences of consumption, such as paranoia

(Fockele et al., 2023). Moreover, stigma is a barrier to social reintegration, making it difficult to find employment and access healthcare services, prolonging addiction and its negative effects (Cumming et al., 2016; Martínez et al., 2023a, Asante & Lentoor, 2017; Room, 2005; Forchuk et al., 2024).

In the family context, the experiences of crystal meth users, their family members, and health professionals converge on the observation that methamphetamine consumption generates constant conflicts, particularly in intimate relationships with the user's partner or even with other family members, affecting children as well (Asante & Lentoor, 2017). These conflicts with partners often manifest as jealousy and domestic violence, including verbal, physical, emotional, and sexual abuse. However, violence is not limited to parents, sometimes extending to others that are not family member as other studies have shown (Brown & Hohman, 2006). In addition, consumption exposes children to violent, negligent environments, increasing the risks of emotional and behavioral problems (Brown & Hohman, 2006) and early onset of drug use because of its association with child abuse (O'Brien et al., 2008; Vandermause, 2012, Boles & Miotto, 2003). Strengthening parenting skills is essential to mitigate these risks. Some parents also have mentioned that methamphetamine consumption makes them indifferent to the feelings of their children, which could be related to the extreme feelings of anger and apathy mentioned in other studies (Brown & Hohman, 2006).

On a personal level, crystal meth use leads to extreme weight loss, dental problems, general health deterioration, anxiety, depression, delusions, and consequences such as withdrawal syndrome, disrupting users' daily life. Previous studies have documented these physical consequences and their association with severe mental disorders, including suicidal behavior in quantitative analyses (Martínez et al., 2023b). These studies provide qualitative information emphasizing the vulnerability of crystal meth users because of changes in their social structure and their own behavior and provide information on the anxiety and depression felt by users. It also shows how auditory delusions affect users and how sleep disruption interferes with their activities. These results also highlight the need to consider crystal meth use and its association with depression, anxiety and other problems derived from its physical consequences.

Although the study only included two female users, the narratives gathered highlight distinct gender-related experiences warranting further exploration. Addressing gender differences in crystal meth use is essential to understanding its consequences and barriers to treatment. Future research should broaden the sample of female participants to provide a more comprehensive understanding of the phenomenon and achieve more effective interventions.

In conclusion, the social, familial, and personal consequences of crystal meth use require interventions that are not only multifaceted but also comprehensive and long term. Interventions must be designed as ongoing processes rather than short-term solutions. Sustained support is crucial to help users navigate the complex challenges of recovery, minimize the risk of relapse, and promote lasting social reintegration. These interventions must consider that the consequences of crystal meth consumption go beyond the individual level, significantly impacting family and social dynamics, and requiring the simultaneous addressing of multiple areas of concern. Moreover, these consequences often become barriers to help seeking for users and their families , further complicating recovery and reinforcing the cycle of harm. The approach to these interventions must be based on a profound understanding of the consumption trajectories of crystal meth users, considering not only the factors that led to the onset of use but also the challenges they face throughout the recovery process.

Moreover, these strategies must address the reduction of stigma, which significantly hinders access to healthcare services and treatment, constituting a critical barrier to their social reintegration. Stigma not only isolates users but also affects their families, creating additional obstacles to seeking help and reintegrating into society. Reducing stigma through education and community-based approaches is crucial to creating supportive environments that facilitate rehabilitation.

This study highlights the importance of including the experiences of crystal meth users, their families, and healthcare professionals in the development of intervention strategies. These perspectives provide valuable insights into the multifaceted impacts of crystal meth use and barriers to recovery. Adopting a sustained, holistic, approach will enable researchers to design interventions that will better address the social, psychological, and economic dimensions of crystal meth use, promoting effective recovery and long-term social reintegration.

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Conflicts of interest

The authors declare they have no conflicts of interest.

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Representation of the Concept of Death in Emergency Medicine Residents following Unsuccessful CPR Procedures

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ABSTRACT

Introduction. In medicine, death is regarded as the total loss of vital functions. However, there is no universally accepted definition as global literature includes various terms for the concept drawn from a range of contexts. **Objective.** To explore how emergency medicine residents perceive death following unsuccessful cardiopulmonary resuscitation (CPR) procedures. **Method.** Qualitative, descriptive, and exploratory study. Participants included five medical residents specializing in emergency medicine who attended patients receiving unsuccessful CPR. Data were obtained through the triangulation method using semi-structured individual interviews. **Results.** For medical residents, death constitutes a painful process associated with loss or departure. The experience elicits feelings of sadness, frustration, and helplessness in them. These feelings are more pronounced in the case of young patients, pregnant women, and children, subsequently manifesting in health problems. **Discussion and conclusion.** The concept of death shared by emergency medicine residents is primarily linked to biological aspects. Despite constant exposure to death, they remain sensitive to it, experiencing feelings such as helplessness, sadness, and frustration, which impact their life stories. Since these residents believe they lack the tools to cope with this situation, it is essential to offer them thanatological training to develop strategies for handling the death of their patients.

Keywords: Death, feelings, emotional skills, representation.

RESUMEN

Introducción. En medicina la muerte es considerada como la pérdida total de las funciones vitales. Pero no podemos quedarnos con una sola definición pues en la literatura mundial existen diferentes análisis sobre la definición de muerte desde perspectivas muy particulares y en diferentes circunstancias. **Objetivo.** Explorar cómo significan la muerte los médicos residentes de urgencias tras la realización de maniobras de reanimación cardiopulmonar no exitosas. **Método.** Estudio cualitativo, descriptivo y exploratorio. Participaron 5 médicos residentes de la especialidad de urgencias médicas que atendieron pacientes que recibieron maniobras de reanimación cardiopulmonar con resultado no exitoso. Datos obtenidos a través del método de triangulación, a través de entrevistas individuales semiestructuradas. **Resultados.** Para los médicos residentes la muerte representa un proceso doloroso que está ligado a una pérdida o partida. Esta experiencia despierta en el médico residente sentimientos de tristeza, frustración e impotencia. Siendo más evidentes cuando se trata de pacientes jóvenes, mujeres embarazadas y niños. Estos sentimientos son manifestados posteriormente con problemas de salud. **Discusión y conclusión.** La representación de la muerte que tiene el médico residente de urgencias está ligada principalmente a aspectos biológicos y a pesar de la convivencia constante con la muerte, aún se sensibilizan con ella generando sentimientos como: impotencia, tristeza y frustración que tiene repercusión en sus historias de vida pues consideran que no cuentan con herramientas necesarias para hacer frente a esta situación. Por lo que es necesario ofertarles capacitación tanatológica que les permitan el desarrollo de estrategias para que puedan lidiar con la muerte de sus pacientes.

Palabras clave: Muerte, sentimientos, competencias emocionales, representación.

INTRODUCTION

The emergency department is a high-pressure work environment where emergency physicians must be prepared to manage situations arising during their shift, including severe illness, trauma, and the possibility of patient death (Howard et al., 2018). Death, whether expected, due to chronic illness or unexpected, resulting from a sudden disease or injury, is a relatively common occurrence in emergency departments.

According to data from the European Registry of Cardiac Arrest (EuReCa), annual incidence of in-hospital cardiac arrest ranges from 1.5 to 2.8 per 1,000 hospital admissions (Gräsner et al., 2021). In Mexico, 212,404 deaths were recorded between January and March 2024 (National Institute of Statistics and Geography Spanish acronym INEGI], 2024). However, no statistical data exist on the number of cardiopulmonary arrest events that received resuscitation efforts or the proportion of unsuccessful outcomes, limiting our ability to grasp the scope of this phenomenon.

Death is an inevitable part of the life process, as natural as being born or growing, although it is difficult to face.

Although medical trainees in emergency services frequently coexist with death and its process, it is not always easy for them to cope with and is regarded as one of the most impactful experiences derived from their work (Halpern et al., 2009; Adriaenssens et al. 2012).

The issue of feelings about death is not addressed in the medical school curriculum. The Hippocratic tradition calls for the acknowledgement of human limitations in the face of death. However, this concept has evolved over time, and in current medical practice, death is considered a therapeutic failure (Gallagher, 2014; Zhang et al. 2022).

In other words, we do not know what happens when, despite the efforts of the resuscitation team, they fail to obtain a satisfactory response and the patient dies. Only those who have been in this situation can understand the silences and looks experienced in the emergency room, which often convey a sense of helplessness.

This raises the following questions. What goes through the minds of the resuscitation team members at that moment? What feelings do they experience? Does this experience have repercussions on their daily lives?

Based on these questions, this study seeks to understand what the concept of death means for medical residents specializing in emergency medicine after performing unsuccessful Cardiopulmonary Resuscitation (CPR) procedures.

METHOD

Study design

A qualitative study was designed with a phenomenological, descriptive, and exploratory approach to understand the meanings of the concept of death arising from the experiences of medical specialists in training within the context of a secondary level hospital in the National Health System. The study adopted the Consolidated Criteria for Reporting Qualitative Research (COREQ), a 32-item checklist for interviews and focus groups (Tong et al., 2007).

Description of subjects/sample

The resident physicians were personally invited to participate. Of the seven comprising the training staff of the emergency department at the time of the study, five agreed to participate. All were first-year residents specializing in emergency medicine with over six months of clinical activities. During this time, they had attended patients who had received cardiopulmonary resuscitation (CPR) maneuvers with unsuccessful outcomes. This period provided participants with a range of experiences that allowed for an analysis of their understanding of the concept of death. Although attending patients requiring resuscitation is common in emergency services, each physician reacts differently to unsuccessful CPR maneuvers.

Procedure

Information was gathered through the triangulation of in-depth individual interviews and direct observation, which was useful for observing the resident physicians' interactions during the resuscitation process and their nonverbal communication during the interviews. The individual interview technique was employed with the research participants, ensuring privacy so they could comfortably express their experiences, emotions, and feelings.

This semi-structured interview was based on a guide (Annex 1) and was designed to identify participants' points of view, allowing greater freedom of expression and more openness in interacting with them. Interviews were held at the Zone No. 2 IMSS General Hospital, in a comfortable, private area outside the emergency department according to the participants' availability and were scheduled in advance.

Interviews were recorded using a portable recorder, with the prior consent of the participants and subsequently analyzed. Recording ensured more reliable transcriptions of the information. Discourse contents were fully transcribed, and registration units (words or phrases) were determined, reducing texts to significant words and expressions to identify, select, and classify categories.

Interviews were conducted exclusively by the research team comprising a clinical psychologist with a doctorate in human development, a family physician, and an emergency physician, and lasted between forty-five and sixty minutes. Each participant was interviewed once, in line with the research objectives. During the interviews, only the researchers and participants were present. The remaining resuscitation team members were not present during the interview to ensure the resident physician's privacy.

Data analysis was performed to identify the sociodemographic profile of the interviewed participants. The Bardin method (2016) was used to organize and systematize data through content analysis and divided into categories that emerged from the participants' discourse, converging with the research objective.

Results were constructed from four central codes or categories: "representation of the concept of death in the emergency medicine resident," "feelings aroused in the resident physician in response to their patients' death process," "impact on personal history experienced by resident physicians when dealing with their patients' deaths," and "emotional skills developed by resident physicians to cope with their patients' deaths."

Ethical considerations

The study was approved by the local ethics committee in research 7038 and local research committee 703 of the Family Medicine Unit No. 13 in Tuxtla Gutiérrez, Chiapas. The collected data were coded to protect participants' information, and only the researchers had access to the database. In addition, the study adhered to the ethical principles of the General Health Law on Research and the Declaration of Helsinki. Before the interviews, written informed consent was obtained, and participants were informed of the research objective, procedures to follow, and contact information for the researchers responsible for the study.

RESULTS

The study involved five first-year medical residents specializing in emergency medicine. The sample consisted of two men (40%) and three women (60%), aged between twenty-eight and thirty-seven, with an average age of 30.2 ± 3.4 years. Data analysis of the interviews yielded the following four categories.

First category: representation of the concept of death in emergency medicine residents

This category is linked to the questions posed to professionals regarding the meaning of their patients' deaths. According to their accounts, death represents a painful process associated with loss or departure. This was evident during the interviews, where some of them had a trace of sadness in their voices, together with lowered gazes and silent tears. These considerations are illustrated in the following statements:

> *It is a painful process, not only for the patient's family [...]* (UMQ 1).

> *Death is the loss of a loved one* (UMQ 3).

While most physicians regard death as the absence of vital signs, giving it a biological context, some of them provide a more complex context by including spiritual or holistic aspects:

> *Clinically, it is the absence of vital signs despite CPR maneuvers* (UMQ 2).

> *From a medical point of view, it is the cessation of the body's vital functions [...] But I also believe that we are made up of body, soul, and spirit [...]* (UMQ 5).

Second category: feelings aroused in emergency medicine residents during the process of their patients' deaths

In this category, the feelings aroused in the participants in the face of their patients' deaths were clarified. During the interview, we observed that discussing this was painful for the resident physicians, as borne out by their somber expressions and teary eyes when recalling the events.

The main emotions experienced were sadness, frustration, emotional exhaustion, and helplessness. According to the participants, these feelings intensify and are more evident when dealing with young patients, pregnant women, and children:

> *We mainly feel sad when it comes to young patients, pregnant women, or children [...]* (UMQ 5).

> *I feel emotionally exhausted [...] when it's a patient you could potentially save, their death fills me with frustration [...]* (UMQ 2).

> *Feelings vary according to each patient, but generally, I feel frustrated* (UMQ 4).

Another emotion expressed by some residents was a sense of calm at having provided quality care and having offered their patients the best they could at that moment.

This is evident in the statement of the following resident physician, who, during the interview, after a moment of silence, sighed deeply, smiled faintly, and shared the following with us:

> *It's a moment that creates a lot of stress that requires a lot of responsibility and commitment [...] In the end, I feel calm because I know I gave my patient my best (UMQ 3).*

Third category: impact on the personal history experienced by medical residents dealing with their patients' deaths

This category highlights the difficulties experienced by the participants as a result of their patients' deaths. The negative feelings experienced are subsequently manifested through health problems, such as fatigue, exhaustion, emotional lability, anxiety, and mood swings.

> *At times, frustration has caused me anxiety [...] personally, it has caused me problems in the workplace* (UMQ 3).

> *I have experienced mood swings such as irritability, emotional lability, and bad temper [...] and I have needed psychological support [...] When I replay the event in my mind and think I could have done something differently, it causes me anxiety* (UMQ 2).

> *Whenever a patient dies, I feel very tired, with intense emotional exhaustion* (UMQ 1).

One participant reported that the experience has altered their life story by making them emotionally colder.

> *I feel that facing the death of patients makes me more guarded with my emotions. I believe it has made me have a stronger character, even making me emotionally colder in various situations* (UMQ 4).

Fourth category: emotional skills developed by medical residents to deal with the death of their patients

This category includes the emotional skills developed by the participants in response to their patients' deaths. Medical residents have developed adaptation mechanisms enabling them to regulate their emotions, such as introspection, empathy, confidence, and stress management through recreational activities and breathing exercises.

> *Listening to music I like relaxes me and allows me to calm my emotions [...] seeing pictures of my family fills me with joy [...]* (UMQ 4).

> *When I feel anxious after resuscitation maneuvers, I take a few minutes to do breathing exercises [...]* (UMQ 3).

> *Feedback from the event allows me to self-reflect [...] comments from colleagues about well-performed actions fill me with positive thoughts [...] Also, listening to music relaxes me* (UMQ 1).

> *In my case, post-event feedback helps me understand the clinical course and feel more at ease [...] Talking to my family and engaging in leisure activities such as listening to music or watching movies helps me feel more relaxed* (UMQ 2).

DISCUSSION AND CONCLUSION

Death is not commonly discussed and even within the healthcare sphere, it is not customary to reflect on a patient's death. On the contrary, the topic is often avoided (Sevilla-Godínez, 2009).

This makes it difficult to define death because it involves considering biological, medical, legal, religious, and social viewpoints, which are intricately related.

We know that in the field of health, the concept of death is rooted in the biological sciences. However, each of us imbues the concept of death with our own meaning based on our personal experiences and professional expertise.

According to the interviews, the majority of respondents espoused a concept of death from a biological context, with the absence of vital signs being the first response in all interviews. This aligns with Gaona-Flores et al. (2015), who observe that death in medical practice has been regarded as the total loss of vital functions.

Resident physicians considered that death can occur due to multiple causes. However, the definition of death can vary according to a physician's religious beliefs (Costa et al., 2017). According to the accounts provided in the interviews, the representation of death is also related to a spiritual experience. Some medical residents included spiritual and holistic aspects in their replies, giving it a connotation of the end of physical existence, while considering that the soul or spirit continues to exist.

One element identified as a cultural construct is the difficulty of accepting the death of younger patients. According to Mocellin-Raymundo et al. (2017), *"the death of young people, children, or pregnant women is seen as an interruption of a biological cycle, creating dissatisfaction and disillusionment among healthcare professionals."*

In this study, we observed that the death of adults or older adults is more easily accepted than that of pediatric patients, as reported by Costa et al. (2017) and Aredes et al. (2018), who note that a resident physician may experience feelings of sadness and loss when a pediatric patient dies.

This situation is obviously more difficult to cope with for resident physicians with young children, as they may identify with the loss, as demonstrated in the work of Poo et al. (2021). The emotional impact of a pediatric patient's death became clearer to the researchers when one of the participants shared the following:

> *"It was a traumatic event that made me very frustrated because in the end, I felt that maybe I hadn't done everything I could to save the child […] I feel that this particular case affected me more because I have young children."*

Consistent with other research (Fernández et al., 2017; Jiménez -Herrera & Axelsson, 2015) in the emergency field, this study observed feelings of helplessness, frustration, sadness, and anxiety stemming from their work experiences. This is important, as Halpern et al. (2009) and Adriaenssens et al. (2012) note. Even though medical trainees in emergency services frequently encounter death and its process, it is not always easy to cope with and can be considered one of the most impactful experiences derived from their work.

When a healthcare professional is exposed to tense, conflictive, or traumatic situations, such as the death of a patient, it may elicit distress or emotional trauma (World Health Organization [WHO], 2013). Unfortunately, the issue of the feelings caused by a patient's death is not considered in the medical school curriculum (Gallagher, 2014). This lack of training prevents medical trainees from acquiring and developing the necessary emotional skills to deal with their patients' deaths, making them less resilient.

During the course of the study, we realized that despite the negative experience the death of a patient may constitute for resident physicians in the emergency department, there are also moments of reflection that bring them peace, as they feel they did their best to help the patient. These moments can be described as positive experiences and have also been mentioned in other articles (Vázquez et al., 2021).

Studies conducted in the United States on emergency medical personnel indicate that talking with colleagues is used as a coping strategy after a patient's death.

However, it is significant that 75% of the healthcare professionals surveyed in these studies also used the mental health services of their institutions to receive psychological support (Essex & Scott, 2008; Clompus & Albarran, 2016).

These data contrast with our findings, as our interviewees reported not having received support through psychological intervention strategies to mitigate the effects produced by their patients' deaths. Instead, family and coworkers, through debriefing or defusing, were the main sources of emotional support when negative feelings arose from these experiences.

This is interesting because authors such as Roth & Moore (2009) consider that the family environment is not ideal place for sharing the difficult events that occur during clinical practice. Due to its characteristics, the profession itself is considered a limiting factor in creating an appropriate family climate. Other studies, such as the one undertaken by Valle-Figueroa et al. (2019), consider that social support "makes the everyday task of dealing with death and the process of patients' death more bearable." This social support, provided by family and friends, as we observed in our work, is a key element in the coping process for resident physicians.

The authors recognize several limitations of the study. One limitation stems from the methodology used. Since it is a qualitative study, the results cannot be extrapolated to all healthcare professionals involved in a resuscitation team. However, the study provided valuable insights into the emotional resources of our trainees when coping with a patient's death.

Another limitation was the characteristics of the participating group of medical residents, all in their first year of specialization. Although it would have been ideal to include residents from other years, as it is a new training site, we did not have access to other academic years.

Finally, a point to consider for future research is how the attitude of medical residents toward death varies according to their cultural background, religion, other spiritual aspects, and academic training.

In conclusion, the representation of death among emergency medical residents is primarily linked to biological aspects. Despite their constant exposure to death, they remain sensitive to it, experiencing feelings such as helplessness, sadness, and frustration. These feelings impact their life stories because they believe they lack the necessary tools to cope with this situation. It is therefore essential to offer them thanatology training to develop strategies to deal with the death of their patients.

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Conflicts of interest

The authors declare no conflict of interest.

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INTERVIEW GUIDE (ANNEX 1)

To begin, could you tell me:

• How often do you experience the death of your patients during cardiopulmonary resuscitation maneuvers?

If you feel comfortable, try to visualize the event in your mind. Then tell us:

• What does death mean to you?

• Has your current perspective on death changed from the concept you had at the beginning of your career? How did this change occur?

• Do you think that the concept of death you hold today has been modified by what you've learned throughout your career? In what way?

• Do you think your religious beliefs have influenced the meaning you attribute to the concept of death? How?

• As a physician, how have you been prepared to cope with these situations in your life?

• As a physician, how have you been trained to address these topics with patients' families?

• As a physician, how do you think death is understood in our professional field?

In your own words, when cardiopulmonary resuscitation maneuvers have not been successful, tell us:

• What would you have liked to have been done differently?

• Do you consider that this event posed emotionally challenging results for you?

• How has this experience been for you?

• What thoughts or emotions did this experience elicit in you?

• How intense were these thoughts or emotions?

• Did these thoughts or emotions arise at the moment the resuscitation maneuvers ended, or after they had finished?

• How long did the discomfort caused by the situation persist?

• What did you do to stop feeling distressed?

• Do you think you were able to manage these emotions or feelings?

• What specific training do you think healthcare professionals need to manage their emotions better?

• From your experience, what techniques have you learned for managing emotions after an unsuccessful cardiopulmonary resuscitation?

• In what ways have your experiences with unsuccessful cardiopulmonary resuscitation affected your personal life?

In memoriam
Dr. Rodrigo Marín Navarrete (1973-2025)

El Comité Editorial de la revista Salud Mental del Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, y quien suscribe estas palabras, lamentamos profundamente la partida del Dr. Rodrigo Marín Navarrete, quien fungió como coeditor científico de esta revista durante el período 2014-2019. Durante este tiempo, el Dr. Marín Navarrete dialogó por cambios vanguardistas en la dinámica editorial de la revista, tales como la ampliación y diversificación del cuerpo de revisores, una mayor sistematicidad y rigor del proceso de revisión por pares, y el énfasis de la revista en artículos empíricos escritos lengua anglosajona para promover su visibilidad para la comunidad científica internacional. Todos estos cambios, no tenemos duda, elevaron la calidad de la revista Salud Mental y su posición como referente de investigación científica en psiquiatría y psicología.

A título personal, tuve la oportunidad de trabajar con el Dr. Marín Navarrete, siendo no sólo parte del equipo de investigadores asociados que colaboró en los cambios de la revista, sino también en la Unidad de Ensayos Clínicos en Adicciones y Salud Mental que él dirigía, donde pude aprender de su liderazgo para diseñar, implementar y hasta defender proyectos de investigación. Rodrigo, como yo me dirigía a él desde la apertura amistosa que él sabía proyectar, fue un verdadero portavoz del abordaje profesional, desde la práctica y la investigación científica, de la salud mental, y especialmente de fenómeno tan complejo y espinoso del que discutía apasionadamente: la patología dual.

Prueba de su trayectoria fueron los múltiples institutos y asociaciones con las que colaboró o fue miembro activo, por nombrar sólo algunas: el Instituto Mexiquense Contra las Adicciones, el Instituto para la Atención y Prevención de las Adicciones en la Ciudad de México, el Centro Nacional para la Prevención y Control del VIH y el sida, la Florida Node Alliance of the NIDA-CTN, la Sociedad Española de Patología Dual, la Fundación Federico Hoth (Proyectodah), los Consejos Estatales contra las Adicciones de los estados de Puebla, Hidalgo, Querétaro y Morelos, la Asociación Psiquiátrica Mexicana, la Universidad Nacional Autónoma de México, o la Universidad Iberoamericana (su alma mater desde la licenciatura hasta sus estudios de maestría y doctorado).

Pocos años después de que terminara mi tiempo de colaboración con su equipo de trabajo, el Dr. Marín Navarrete, ya como Director de Investigación y Enseñanza de los Centros de Integración Juvenil, A. C., y Editor en Jefe de la Revista Internacional de Investigación en Adicciones de esta misma asociación, volvió a honrarme con su confianza y generosidad para ser parte de su comité editorial, trazando así un círculo curioso para los dos momentos en que estuve cerca de su biografía profesional.

Nos lega un ejemplo de compromiso con la investigación y difusión de las ciencias de la salud mental. Con gratitud le recordaremos.

Dr. Aldebarán Toledo Fernández
Miembro del Comité Editorial, Salud Mental.
Ciudad de México, enero 2026

In memoriam
Raúl Cardoso Gutiérrez (1953-2026)

Fotografía: Claudia Gallardo

Sueño 1. Lápiz y Pastel; Raúl Cardoso 1982.

Hay compañeros que resultan esenciales, ¿qué quiere decir esto? Que con su encuentro, conocimiento, desempeño, amistad; por citar algunos de sus atributos, nos conformaron y modelaron de alguna manera, para mi es el caso de Raúl. Nos conocimos en 1980 en el Instituto Nacional de Neurología, él tenía a su cargo el Departamento de Dibujo e Ilustración de la Unidad de Investigaciones Cerebrales. Tiempos en los que prácticamente no existía el proceso de imágenes y textos por computación, lo que se traduce en que todo se elaboraba a mano libre y pulso firme, letreros con alfabetos de regletas Leroy, gráficos dibujados a tinta china en papel albanene y por supuesto todo fotografiado y revelado en blanco y negro en el cuarto obscuro; todo eso aprendí de él, crecimos juntos profesionalmente y tuvimos la fortuna de llegar a inaugurar la División de Investigaciones en Neurociencias del Instituto Mexicano de Psiquiatría en 1983, desde entonces Raúl se convirtió para todos nosotros en este "compañero esencial" me atrevo a decir que no ha habido publicación científica y algunas extra científicas en las que no haya intervenido.

Otra faceta importante que destacar de su ser fue su obra creativa: como pintor y dibujante plástico, plasmando seres con su estilo personal desde sus primeros trabajos, lo que lo llevó a tener diversas exposiciones. Su carácter afable siempre dispuesto, su ecuanimidad y bonhomía de trato y su impecable desempeño en su trabajo hace de su partida una pérdida de un compañero esencial, descansa en paz buen amigo.

Francisco Pellicer Graham

GUÍA PARA LOS AUTORES

La revista Salud Mental publica artículos originales sobre psiquiatría, psicología, neurociencias y disciplinas afines de acuerdo con los siguientes formatos:

1. **Editoriales**
   Se escriben por invitación del Director-Editor de la revista. Deben expresar opiniones autorizadas sobre temas específicos de interés para la comunidad científica y para el área de la salud mental. Su objetivo es estimular el debate y promover nuevas líneas de investigación. *Extensión máxima: 1000 palabras*.
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   Presentan resultados de investigaciones no publicados en otras revistas. Pueden desarrollarse a partir de las siguientes metodologías:
   - **Metodología cuantitativa:** Incluye resultados primarios y secundarios de estudios transversales, ensayos clínicos, casos y controles, cohortes y estudios cuasi experimentales. *Extensión máxima: 3500 palabras*.
     De acuerdo con el tipo de estudio, los manuscritos deben cumplir con las guías:
     • Los ensayos clínicos aleatorizados deben adecuarse a las guías *CONSORT* (http://www.consort-statement.org).
     • Los estudios con diseños no experimentales, a las guías *TREND* (https://stacks.cdc.gov/view/cdc/149677).
     • Los estudios transversales, de cohorte, y de casos y controles, a la guía *STROBE* (http://www.strobe-statement.org).
   - **Metodología cualitativa:** Incluye reportes de grupos focales, entrevistas a profundidad, redes semánticas y análisis de contenido. *Extensión máxima: 5000 palabras*.
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3. **Artículos de revisión (sección revisada por pares)**
   - **Revisiones sistemáticas:** Preferentemente deben incluir un metaanálisis. *Extensión máxima: 4000 palabras*.
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   Incluye reportes de efectos de un método diagnóstico o terapéutico que sea útil o relevante en el ámbito médico, académico o científico. *Extensión máxima: 2000 palabras.*
   Deben cumplir con la guía *CASE REPORT* (https://www.care-statement.org/checklist)

*Nota***:** El conteo de palabras para cada una de estas secciones excluye el título, los resúmenes y las palabras clave, así como los apartados de financiamiento, conflictos de interés y agradecimientos; tampoco se consideran las palabras incluidas en tablas, figuras y referencias.

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En caso de autoría colectiva, se incluirá el nombre de los redactores o responsables del trabajo seguido de «*y el grupo...»* cuando todos los miembros del grupo se consideren coautores del trabajo. Si se desea incluir el nombre del grupo, aunque no todos sus miembros sean considerados coautores, se mencionarán a los autores responsables seguido de *«en nombre del grupo...»* o *«por el grupo...»*. En cualquier caso, los nombres e instituciones de los miembros del grupo se incluirán en un anexo al final del manuscrito.

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Es muy importante que los autores consideren los siguientes puntos antes de enviar sus manuscritos:

1. Los manuscritos deben redactarse de forma clara y concisa, sin errores de ortografía ni de sintaxis.
2. El texto debe estar escrito en formato Word, en fuente Times New Roman de 12 puntos, a doble espacio, con márgenes de 2.5 cm. y en tamaño carta.
3. Las páginas se numeran consecutivamente, empezando por la página del título y con el número escrito en la esquina superior derecha.
4. La primera página (donde se encuentra el título) debe contener los siguientes apartados en el orden que aquí se menciona:
   - **Título del trabajo en español y en inglés.** El título debe ser descriptivo e indicar los resultados principales del estudio. *Extensión máxima: 25 palabras*
   - **Título corto en español y en inglés.** *Extensión máxima: 6 palabras*.
   - **Nombre completo del autor y de los coautores.** Los autores deberán colocarse en listado; luego, en superíndice, deberá colocarse un número arábigo que indique la institución de adscripción.
   - **Número ORCID de los autores.** Es requisito que cada uno de los autores cuente con su número de identificación ORCID, el cual se puede conseguir en https://orcid.org/register
   - **Adscripción de los autores.** Se debe indicar con números arábigos y en superíndice. Las adscripciones se colocan inmediatamente después de los nombres de los autores (no como notas en pie de página). Es necesario que la adscripción especifique: departamento, área, institución, ciudad y país de cada autor. No es necesario indicar la dirección postal. Las instituciones deben escribirse en su idioma original, sin traducción. Si los autores añaden siglas, éstas deben pertenecer al nombre oficial. No se deben escribir cargos ni grados de los autores (doctor, residente, investigador, etc.).

     Ejemplo:

     Juan José García-Urbina,[1]

     Héctor Valentín Esquivias Zavala[2]

     [1] Dirección de Investigaciones Epidemiológicas y Psicosociales, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Ciudad de México, México.
     [2] Departamento de Publicaciones, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Ciudad de México, México.

- Al final de la primera página, en el apartado ***"Correspondencia"***, se proporcionarán los datos de contacto del autor corresponsal (dirección postal completa, teléfono, correo electrónico). Es con quien Salud Mental se comunicará durante todo el proceso editorial.

  Ejemplo:

  Correspondencia:
  Juan José García-Urbina
  Dirección de Investigaciones Epidemiológicas y Psicosociales, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz.
  Calz. México-Xochimilco 101, San Lorenzo Huipulco, Tlalpan, 14370, Ciudad de-México, México.
  Tel: 55 4152-3624
  E-mail: jurb@imp.edu.mx

5. La segunda página debe contener los resúmenes del trabajo presentado en inglés y español. *Extensión máxima: 250 palabras.*
   - ***Artículos originales y Revisiones sistemáticas.*** Los resúmenes deben estar conformados por: Introducción, Objetivo, Método, Resultados y Discusión y conclusión.
   - ***Casos Clínicos.*** Los resúmenes deben estar conformados por: Introducción, Objetivo, Principales hallazgos, Intervenciones y resultados y Discusión y conclusión.
   - ***Palabras clave.*** Al final de cada resumen se incluirá un mínimo de cuatro y un máximo de seis palabras clave, separadas por comas y en minúsculas. Las palabras clave deben ser las mismas en inglés y en español. Éstas suelen emplearse para la indexación de los artículos, por lo cual tres de ellas deben encontrarse en el MeSH (*Medical Subject Headings*) que se puede consultar en: http://www.nlm.nih.gov/mesh/MBrowser.html.
6. A partir de la tercera página comienza el cuerpo del manuscrito, el cual deberá conservar la estructura señalada en el resumen.
   - ***Introducción (o Antecedentes en el caso de las Revisiones narrativas).*** El último párrafo de este apartado debe incluir de forma clara los objetivos del trabajo y, si se cree necesario, las hipótesis.
   - ***Método.*** Es preciso que cuente con las siguientes secciones:
     - Diseño del estudio
     - Participantes/descripción de la muestra
     - Sedes
     - Mediciones
     - Procedimientos
     - Análisis estadísticos
     - Lineamientos éticos.

   Nota: En caso de los artículos de revisión y casos clínicos, estas secciones pueden ser modificadas de acuerdo con la guía PRISMA (revisiones sistemáticas o la guía CASE REPORT (casos clínicos).

   - **Resultados.** Se presentarán en una secuencia lógica dentro del texto. Pueden apoyarse con tablas, gráficas y figuras.
   - **Discusión y conclusión.** En esta sección se destacarán los aspectos nuevos e importantes del estudio y las conclusiones que derivan del mismo, así como las posibles implicaciones de sus hallazgos y sus limitaciones.
7. Después del apartado de Discusión y conclusión, es preciso agregar las declaraciones de los autores en el siguiente orden:
   - ***Financiamiento.*** En este apartado se debe declarar si el estudio o la preparación del manuscrito recibió algún tipo de financiamiento, indicando el nombre de la entidad que proporcionó los fondos.

     Ejemplo:

     Este estudio fue financiado en parte por el CONSEJO NACIONAL DE CIENCIA Y TECNOLOGÍA. (No. XXXXXXX).

     Si no se recibió ningún apoyo financiero, los autores deben declararlo también.

     Ejemplo:

     Ninguno.

   - ***Conflicto de intereses.*** En esta sección, los autores deberán declarar si tienen conflictos de intereses relacionados con su actividad científica. Tener un conflicto de interés no supone necesariamente un impedimento para la publicación del manuscrito. Si no existe conflicto de interés se debe insertar la siguiente frase: *"Los autores declaran no tener algún conflicto de intereses"*.
   - ***Agradecimientos.*** Cuando se considere necesario, se mencionarán después de las declaraciones anteriores los agradecimientos a personas, centros o entidades que hayan colaborado o apoyado en la investigación.
8. **Referencias.** Las referencias se colocan después de las declaraciones del autor (Financiamiento, Conflicto de intereses y Agradecimientos), y ***deben seguir exclusivamente las normas de publicación de la American Psychological Association (APA), en su última edición*** (https://normas-apa.org).
9. **Tablas y figuras.** Salud Mental establece un máximo de cinco elementos gráficos en total. ***El estándar solicitado para la elaboración de tablas y figuras es el de la American Psychological Association (APA), última edición*** (https://normas-apa.org)***.*** Éstas se colocarán al finaldel manuscrito después de las referencias:
   - Las tablas deben contener título y, en la parte inferior, una nota con el desglose de las siglas.
   - Las figuras deben enviarse en un formato de alta resolución (mínimo 300 dpi).
   - Los títulos de las tablas y los pies de las figuras deben ser claros, breves y llevar siempre el número correspondiente que los identifique. Dentro del texto, el autor debe indicar entre paréntesis y con mayúsculas en qué parte del texto sugiere insertar los elementos gráficos.

     Ejemplo:

     Se cambiaron las definiciones de algunos patrones conductuales (Tabla 3) de manera que fueran más comprensibles en el idioma español y se redefinieron las categorías que agrupan dichos patrones con base en la literatura especializada. (INSERTAR AQUÍ TABLA 3)

ARCHIVOS COMPLEMENTARIOS

1. ***Carta de autorización de uso de la obra.*** Debe estar firmada por todos los autores y enviarse en formato PDF que se puede descargar en https://revistasaludmental.gob.mx/public/Carta-autorizacion-para-publicacion.pdf.
2. ***Carta de presentación.*** El autor debe exponer las fortalezas de su aportación científica, resaltando el alcance, la originalidad y la importancia de su contribución

al campo de la salud mental. *Es de carácter obligatorio mencionar a tres revisores nacionales o internacionales en el campo de conocimiento del manuscrito sometido, favor de indicar el nombre completo y correo electrónico de cada uno de los revisores.* Debe cargarse en formato PDF.

ÉNFASIS Y PUNTUACIÓN

1. Es importante que los manuscritos eviten en general las notas a pie de página, aunque se pueden considerar si son claramente necesarias.
2. Las cursivas deben utilizarse para:
   - Destacar palabras extranjeras.
   - Enfatizar expresiones populares.
   - Mencionar títulos de libros, documentos ya publicados y publicaciones periódicas.
3. Las cursivas pueden emplearse para:
   - Resaltar términos significativos o importantes cuando se mencionan por primera vez.
   - Destacar una palabra u oración dentro de una cita.
4. Las comillas dobles deben usarse solamente para:
   - Citar párrafos de otros autores dentro del texto.
   - Citar textualmente fragmentos del discurso de los sujetos de estudio.
5. Evite el uso de paréntesis doble, es decir, un paréntesis dentro de otro. En su lugar utilice corchetes.
6. Puede emplearse guiones largos para indicar oraciones parentéticas.
7. Deben utilizarse de forma correcta todos los signos de puntuación. Por ejemplo, si emplea signos de interrogación en un texto en español, deben colocarse los de apertura y cierre correspondientes; se procede de igual manera con las comillas.

FÓRMULAS MATEMÁTICAS Y ESTADÍSTICAS

Para presentar los resultados se deben considerar las siguientes indicaciones:

1. Escribir con letra las cifras de cero a nueve y con números las cifras de 10 en adelante.
2. Utilizar números cuando se trate de fechas, muestras, etcétera.
3. Incluir en los datos estadísticos los intervalos de confianza.
4. Los símbolos estadísticos se escriben en cursivas (por ejemplo, *M, SD, n, p)*.
5. Expresar la probabilidad exacta con dos o tres decimales (por ejemplo, p = .04; p = .002) sin el cero adelante del punto decimal. En caso de ser menor a .001 indicarlo con un < .001.
6. Dejar un espacio antes y después de cada signo (a + b = c en lugar de a+b=c).
7. Emplear puntos en lugar de comas para indicar decimales.

VERIFIQUE LO SIGUIENTE ANTES DE SOMETER SU MANUSCRITO

Antes de enviar su manuscrito, cerciórese de adjuntar la documentación solicitada. A los autores, se les devolverá aquellos envíos que no cumplan con los lineamientos editoriales.

1. Manuscrito en formato en WORD.
2. Carta de presentación en formato PDF.
3. Carta de autorización de uso de obra en formato PDF.

GUIDELINES FOR AUTHORS

Salud Mental publishes original articles on psychiatry, psychology, neurosciences and other related fields in the following formats:

1. **Editorials**
   Written at invitation of the Director Editor, editorials express authoritative opinions on specific topics of interest to the scientific community and the area of mental health. They are designed to foster debate and promote new lines of research. *Maximum extension: 1000 words*.
2. **Original articles (peer-reviewed section)**
   These articles present research results unpublished in other journals, and can be written using the following methodologies:
   - *Quantitative methodology.* This methodology includes primary and secondary results from cross-sectional studies, clinical trials, cases and controls, cohorts, and quasi-experimental studies. *Maximum extension: 3500 words*.

     Depending on the type of study, manuscripts should adhere to the following guidelines:
     - Randomized clinical trials should adhere to the *CONSORT guidelines* (http://www.consort-statement.org).
     - Studies with non-experimental designs should adhere to the *TREND guidelines* (https://stacks.cdc.gov/view/cdc/149677).
     - Cross-sectional, cohort, and case-control studies should adhere to the *STROBE guidelines* (http://www.strobe-statement.org).
   - *Qualitative methodology.* This methodology includes focus group reports, in-depth interviews, semantic networks, and content analysis. *Maximum extension: 5000 words*.

     Articles using this type of methodology should comply with the *COREQ guidelines* (https://doi.org/10.1093/intqhc/mzm042).
3. **Review articles (peer-reviewed section)**
   - **Systematic reviews.** These reviews should preferably include a meta-analysis. *Maximum extension: 4000 words*.
4. **Case reports**
   They include reports on the effects of a diagnostic or therapeutic method that is useful or relevant in the medical, academic, or scientific field. *Maximum length: 2000 words.*
   These should comply with the *CASE REPORT guidelines* (https://www.care-statement.org/checklist).

Note. The word count for each of these sections excludes the title, abstracts, and keywords, as well as the funding, conflicts of interest and acknowledgments sections. Words included in tables, figures and references are not considered either.

LANGUAGES

Salud Mental receives and publishes only manuscripts in English.

ETHICAL ASPECTS IN PUBLISHING

See Ethical Guidelines for the journal at https://revistasaludmental.gob.mx/index.php/salud_mental/ethicalguidelines

AUTHORSHIP

The number of authors will depend on the type of manuscript submitted. The maximum number of authors for original or review articles is eight. Only in the case of multicenter studies will the maximum number of authors be increased to twelve, provided this is justified by the scope of the study.

In the event of collective authorship, the name of the editors or those responsible for the article will be included followed by “and the group...” when all members of the group consider themselves co-authors of the work. If the name of the group is to be included, even if not all its members are considered co-authors, the authors responsible will be mentioned followed by “on behalf of the ...group or “by the...group.” In any case, the names and institutions to which members of the group are affiliated should be included in an appendix at the end of the manuscript.

EDITORIAL GUIDELINES

It is of the utmost importance for authors to consider the following before sending their manuscript:

1. Manuscripts should be written clearly and concisely, with no spelling or grammatical errors.
2. The text should be written in Word format, Times New Roman font, size 12, with double-spacing and 2.5 cm margins on letter size sheets.
3. Pages should be numbered consecutively, beginning with the title page, with the number written in the upper right corner.
4. The first page (showing the title) should contain the following sections in the order mentioned here:
   - *Title of article in Spanish and English*. The title should be descriptive and indicate the main results of the study. *Maximum extension: 25 words.*
   - *Short title in Spanish and English*. *Maximum extension: 6 words.*
   - *Full name of author and co-authors*. The authors must be listed and then an Arabic number must be placed in superscript, indicating the institution to which they are affiliated.
   - *Author ORCID number.* It is a requirement that all authors have their ORCID identification number, which can be obtained at https://orcid.org/register
   - *Author affiliation*. This should be indicated with Arabic numerals and in superscript. Affiliations should be placed immediately after authors’ names (not as footnotes). Affiliations should specify the department, area, institution, city, and country of each author. It is not necessary to indicate the postal address. Institutions must be written in their original language, without translation. If the authors add acronyms, these must be included in the official name. No positions or degrees of the authors (such as doctor, resident, or researcher) should be written.

   . For example:

   Juan José García-Urbina,[1] Héctor Valentín Esquivias Zavala[2]

   [1] Dirección de Investigaciones Epidemiológicas y Psicosociales, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Ciudad de México, México.
   [2] Departamento de Publicaciones, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz, Ciudad de México, México.

- The **"Correspondence"** section should be placed at the end of the first page, indicating the corresponding author with their postal address, phone and email address. This will be the only author Salud Mental will contact during the process.

  For example:

  Correspondence:
  Juan José García-Urbina
  Dirección de Investigaciones Epidemiológicas y Psicosociales, Instituto Nacional de Psiquiatría Ramón de la Fuente Muñiz.
  Calz. México-Xochimilco 101, San Lorenzo Huipulco, Tlalpan, 14370, Ciudad de México, México.
  Phone: 55 4152-3624
  E-mail: jurb@imp.edu.mx

5. The second page should contain abstracts of the article in English and Spanish. Each abstract should contain a maximum of 250 words.
   - **Abstracts of original articles and systematic reviews** should comprise the following: Introduction, Objective, Method, Results, and Discussion and Conclusion.
   - **Abstracts of Clinical Cases** should comprise Introduction, Objective, Main findings, Interventions, Results, and Discussion and Conclusion.
   - **Keywords.** At the end of each abstract, a minimum of four and a maximum of six keywords should be included, separated by commas and in lower case. Keywords must be the same in English and Spanish. These are used for indexing articles, which is why three of them must be found in the *MeSH (Medical Subject Headings)* (http://www.nlm.nih.gov/mesh/MBrowser.html).
6. The body of the manuscript begins on the third page, which should follow the structure indicated in the abstract:
   - **Introduction (or Background for Narrative Reviews)**. The last paragraph of this section should clearly include the objectives of the review and, if necessary, the hypotheses.
   - **Method.** This should contain the following sections:
     - Study design
     - Subjects/sample description
     - Sites
     - Measurements
     - Procedure
     - Statistical analysis
     - Ethical considerations

     In the case of review articles and clinical cases, these sections may be modified in keeping with the PRISMA guideline (systematic reviews) or the CASE REPORT guideline (clinical cases).
   - **Results.** These should be presented in a logical sequence within the text. They can be supported with tables, graphs, and figures.
   - **Discussion and Conclusion**. This section will highlight new and relevant aspects of the study and the conclusions derived from it, as well as the possible implications of its findings and its limitations.
7. After the Discussion and Conclusion section, author statements should be added in the following order:
   - **Funding**. In this section, authors should declare whether the study or the preparation of the manuscript received any type of funding, indicating the name of the entity that provided the funds.

     For example:

     This study was partially funded by CONSEJO NACIONAL DE CIENCIA Y TECNOLOGÍA (No. XXXXXXX).

     If no financial support was received, authors must state it was well.

     For example:

     None.
   - **Conflict of interest.** In this section, authors must declare whether they have conflicts of interest related to their scientific activity. Having a conflict of interest will not necessarily prevent publication of the manuscript. If there is no conflict of interest, the following phrase must be inserted: "The authors declare that they have no conflicts of interest."
   - **Acknowledgments**. If deemed necessary, acknowledgment of the people, centers or entities that have collaborated or supported the research will be mentioned after the previous statements.
8. **References.** Are placed after the authors' declarations (Funding, Conflicts of interest, and Acknowledgements), and must adhere to the ***Publication Guidelines of the American Psychological Association (APA), last edition*** (https://normas-apa.org).
9. **Tables and figures.** *Salud Mental* establishes a maximum total of five graphic elements. The standard requested for tables and figures adheres to the ***Guidelines of the American Psychological Association (APA), last edition*** (https://normas-apa.org). These will be placed in the same document as the manuscript after the references.
   - Tables must contain a title and a note with an explanation of the acronyms used at the bottom.
   - Figures must be submitted in a high resolution format (minimum image size 300 dpi).
   - Titles of the tables and figure captions must be clear, brief, and always have an identifying number. Within the text, the author must indicate in parentheses and capital letters where the graphic elements should be inserted.

     For example:

     The definition of some behavioral patterns was changed (Table 3) so that they were more comprehensible in Spanish and the categories that group such patterns were redefined based on specialized literature. (INSERT TABLE 3 HERE)

COMPLEMENTARY FILES

1. **Authorization letter for Publication**. This should be signed by all the authors and submitted in PDF format. Download the form at https://revistasaludmental.gob.mx/public/Authorization-letter-for-publication.pdf.
2. **Cover letter**. The author should describe the strengths of their scientific contribution, highlighting the scope, originality, and importance of their contribution to the field of mental health. *It is mandatory to mention three national or international reviewers in the field of knowledge of the submitted manuscript, please indicate the full name and email address of each of the reviewers.* This must be uploaded in PDF.

EMPHASIS AND PUNCTUATION

1. Manuscripts should generally avoid footnotes, although they may be considered if essential.
2. Italics should be used to:
   - Highlight foreign words
   - Emphasize popular expressions
   - Mention titles of books, published documents and periodicals
3. Italics can be used to:
   - Highlight significant or important terms when they are first mentioned
   - Highlight a word or sentence within a quote
4. Double quotes should only be used for:
   - Citing paragraphs from other authors within the text
   - Quoting verbatim fragments of the study subjects' words
5. Avoid using double parentheses, in other words, one parenthesis inside another, and use square brackets instead.
6. Long dashes can be used to indicate parenthetical sentences.
7. All punctuation marks must be used correctly. For example, if question marks are used in a Spanish text, the corresponding opening and closing signs must be included together with quotation marks.

MATHEMATICAL AND STATISTICAL FORMULAE

The following points must be considered when results are presented:

1. Write figures from zero to nine in letters and use numbers for figures from 10 onwards.
2. Use numbers with dates and samples, etc.
3. Include confidence intervals in statistical data.
4. Statistical symbols are written in italics (M, SD).
5. Express exact probability to two or three decimal places (for example, $p = 0.04$; $p = 0.002$), *with no zero in front of the decimal point.* If it is less than .001, it should be written as follows < 0.001.
6. Leave a space before and after each sign (a + b = c instead of a+b=c).
7. Use periods instead of commas to indicate decimals.

PLEASE CHECK THE FOLLOWING BEFORE SUBMITTING YOUR MANUSCRIPT

Before submitting your manuscript, be sure to attach the requested documentation. Submissions failing to comply with the editorial guidelines will be returned to authors.

1. Manuscript in WORD format
2. Cover letter in PDF format
3. Letter authorizing the use of the article