

Prevalence of Posttraumatic Stress in Resident Doctors, Exposed to SARS-COV-2

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Abstract

Objective: Determine the prevalence of posttraumatic stress disorder (PTSD) in a sample of resident doctors of the Hospital de Clínicas, José de San Martín, Buenos Aires, Argentina, one year after the total closure during the quarantine by COVID-19.

Materials and Methods: The following self-administered questionnaires were dispensed: a demographic survey, the Davidson Trauma Scale questionnaire, and the Scale of Dissociative Experiences (EED). First-year residents of basic specialties were excluded, and those who for their specialty does not have contact with patients and licensed doctors were excluded.

Results: PTSD prevalence was 24.3% (n = 25). The medium-sized ones were greater in the participants with a positive score for PTSD compared to those who did not present it (Mann-Whitney U: 13.30, p = 0.001). Associations between the genre were found (X²: 6,074, p = 0.013), the PTSD, and the type of specialty (Fisher’s exact test, p = 0.017). No other associations were found between the other variables analyzed and PTSD.

Conclusion: The prevalence of PTSD was similar to the previous reports. Associations between this disorder, gender, and type of specialty were found. These results should draw the attention of health systems to establish preventive and therapeutic measures to handle this situation.

Keywords: Post-traumatic stress disorder, Dissociative disorder, COVID-19, Mental health, Medical residency

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Introduction

Post-traumatic stress disorder (PTSD) was introduced in the DSM-III by doctors who observed victims of very stressful events. This disorder was previously called the battle clash, traumatic neurosis, war neurosis, Konzentrins-lager syndrome, and post-disaster syndrome: a series of emotional and cognitive responses in those who suffered psychological traumas of diverse magnitude [1].

The diagnostic criteria of PTSD, according to the DSM-5, correspond to the background (death or threats to physical integrity) and their responses (fear, hopelessness, or great horror); Additionally, the symptoms of re-experimentation, avoidance, activation, intrusion, dissociation, cognitive disorders, and self-management behaviors [2] are described.

In a study conducted through a survey of doctors, residents, and doctors with hierarchical positions, it was found that, during the strict closing period in the Argentine Republic, 93.7% of the participants had positive scores for stress, according to Wolfgang questionnaire; 73.5% presented positive scores for generalized professional exhaustion syndrome (Burnout), according to the Maslach questionnaire; 44% and 29% with positive results for anxiety and depression, respectively,

based on the hospital depression and anxiety scale. It was evidenced that resident doctors with greater contact with infected patients had higher values.

Therefore, the objective of this research is to determine the prevalence, through a self-administered survey, of post-traumatic stress syndrome in the population of resident doctors of the Hospital of Clinics “José de San Martín”, a year after a strict isolation quarantine by SARS-CoV-2.

Materials and Methods

Inclusion criteria

Resident doctors of both sexes, of the basic clinical-surgical specialties (from the second year), post-basic specialties, pediatrics, anesthesiology, and intensive care unit of the “José de San Martín” Clinic Hospital.

Exclusion criteria

- First-year resident doctors of basic clinical and surgical specialties.



- Resident doctors of specialties who did not directly contact patients (pathological anatomy, image diagnosis).
- License doctors during the SARS-CoV-2 quarantine due to factors that make them more vulnerable to infection by this virus.
- Those professionals who did not agree to sign the informed consent.

Self-administered questionnaires

A demographic survey, where the following items were answered: sex, age, type of specialty (basic or post-basic; medical or surgical), year of residence, care for patients with SARS-CoV-2 (dichotomic response) if the participant was infected with SARS-CoV-2 (asymptomatic, mild, moderate, or severe disease).

Davidson's trauma scale questionnaire, Argentine validation [4]. The original scale has high internal consistency, high test-retest reliability, and convergent and discriminating validity between patients with slight and serious PTSD [5]. The Argentine version is highly reliable, with good psychometric properties to evaluate this disorder. This scale consists of 17 items corresponding to the 17 symptoms of the previous week, suggested by the DSM-IV. Each item must be answered on a Likert-type scale: in terms of frequency (0: never; 1: sometimes; 2: 2 - 3 times; 3: 4 to 6 times; 4: daily); and degree of affectation (0: nothing; 1: mild; 2: moderate; 3: severe; 4: extreme). The maximum possible score corresponds to 136 points. Davidson's original work proposed a 40-point cutting score such as the one with the greatest specificity, sensitivity, positive and negative predictive values, and efficiency [5] to investigate PTSD. This cutting score was considered for the present work. Although this scale meets the diagnostic criteria of the DSM-IV, it was chosen because there is no validated one in our regional language that meets the criteria of the DSM-5 manual.

The scale of dissociative experiences (EED), was validated in Spanish. The original EED6 version has excellent internal consistency, construct validity, and convergent and discriminating validity. It consists of presenting 28 situations in self-administered, whose responses should consider the frequency of occurrence between 0 and 100%. The validation of the Spanish language has an alpha of Cronbach of 0.91. A 30-difference cut score to those with probable dissociative syndrome from those who do not have it.

This project was carried out under the ethical standards that govern the research in humans following the National Personal Data Protection Law No. 25,326 (Habeas Data Law) and Helsinki's declaration in its latest version (2013 strength).

The Ethics Committee of the Hospital of Clinics "José de San Martín" approved the project. All participants gave their informed consent.

Statistical Analysis

The descriptive statistical analysis was carried out to evaluate the prevalence; bivariate analysis was performed to find the association of variables. According to the distribution of the data, parametric (age) and non-parametric tests (Davidson's scale scores) were performed. X2 tests were performed in the search for an association between categorical variables.

Results

One hundred and three resident doctors responded to the survey. The description of the demographic variables can be seen in

Table 1. The prevalence of PTSD, according to the Davidson Trauma Scale questionnaire, in the analyzed sample was 24.3% (n = 25); the prevalence of a dissociative disorder, according to EED, was 4.9% (n = 5). The medium-sized ones were higher in the participants with PTSD compared to those who did not have the disorder. (U of Mann Whitney 13.30, p: 0.001, figure 1). Surprisingly, three participants without PTSD had positive scores for des.

Associations between the presence of PTSD and gender were found (X2: 6,074, p: 0.013), and PTSD and being a resident doctor of a medical specialty (Fisher's exact test, p: 0.013; or 2.94). The women presented a 2.43 OR for PTSD. The presence of associations between PTSD and the year of residence (exact test of Fisher, p: 0.385), being a resident of the Intensive Care Unit (exact test of Fisher, p: 0.247), the type of specialty (the type of specialty (that is, basic and post-basic, x2: 2,578, p: 0.137), background of infection by COVID-19 (x2: 0.249, p: 0.649). No association was found between the presence of a dissociative disorder and gender (Fisher's exact test, p: 0.27).

Only two participants did not attend to patients infected with SARS-CoV-2 and neither of them obtained positive scores for PTSD or dissociative disorders.

Five participants obtained a positive score for a dissociative disorder according to EED: two of them are second-year residents of

Table 1: Demographic variables.

Gender*	<ul style="list-style-type: none"> • Male: 55 (53.4%); Age: 30.56 ± 2.24* • Female: 48 (46.6%); Age: 30.90 ± 2.24*
Year of Residency	<ul style="list-style-type: none"> • 1st year: 12 (11%) • 2nd year: 30 (29.1%) • 3rd year: 28 (27.2%) • 4th year: 20 (19.4%) • Residents Head: 13 (12.6%)
Specialty	<ul style="list-style-type: none"> • Internal Medicine: 33 (32%) • Post-basic clinic: 23 (22.3%) • Pediatric: 6 (5.8%) • Basic surgery: 27 (26.2%) • Post-basic surgery: 5 (4.9%) • Intensive therapy: 4 (3.9%) • Anesthesiology: 5 (4.9%)
Background of COVID-19 infection	<ul style="list-style-type: none"> • Not infected: 45 (43.7%) • COVID-19 asymptomatic: 11 (10.7%) • COVID-19 mild: 45 (43.7%) • COVID-19 moderated: 2 (1.9%)

Note: The values are expressed in n (%). *Student t-test, t-0.645, p: 0.52 (95% CI: 1.35 - 0.69).

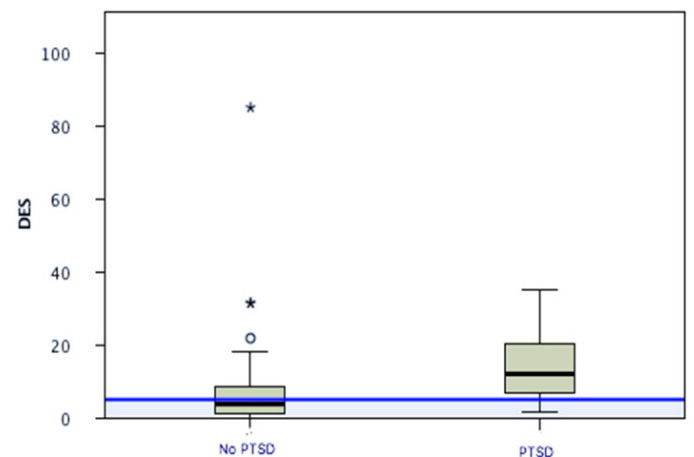


Figure 1: Comparison of the EED scores between the group of patients with PTSD and the group without said disorder. Great median: 5.00, Statistical U of Mann Whitney 13.30, p: 0.001. Note the presence of three "outliers" in the group of participants without PTSD.



internal medicine, two of them are second-year residents of a basic surgical specialty and one is head of residents of a post-basic specialty clinic. Also, only two of them also obtained positive results for PTSD.

The summary of the findings can be seen in Table 2.

Table 2: Findings summary.

Variable	Options	TEPT	No TEPT
Gender*	Female	17 (35.4)	31 (64.6%)
	Male	8 (14.5%)	47 (85.5%)
Year of Residency	1st year	3 (25%)	9 (75%)
	2nd year	11 (36.7%)	19 (63.3%)
	3rd year	4 (14.3%)	24 (85.7%)
	4th year	4 (20%)	16 (80%)
	Residents Head	3 (23.1%)	10 (76.9%)
Intensive therapy (UTI) [^]	Residents from UTI	2 (50%)	2 (50%)
	Other Residents	23 (23.2%)	76 (76.8%)
Kind of specialty	Clinics	21 (46.6%)	45 (53.4%)
	Surgery	4 (10.8%)	33 (89.9%)
Basic vs Post-basic [^]	Post-basic	11 (34.3%)	21 (65.6%)
	Basic	14 (19.7%)	57 (80.3%)
Background of Covid-19 infection	No	12 (26.7%)	33 (73.3%)
	Yes	13 (22.4%)	45 (77.6%)

Note: Values are expressed in n (%). *p < 0.05; [^]p > 0.05.

Discussion

The prevalence of PTSD in the sample analyzed, according to Davidson's trauma questionnaire, is 24.3%. Those with PTSD obtained major dissociation scores in the EED: PTSD participants have more dissociative symptoms than those without PREPT. According to the DSM-5, PTSD includes dissociation as one of its main characteristics [2]. Davidson's trauma questionnaire evaluates the presence of PTSD in accordance with the criteria established in the DSM-IV [5]: However, according to the results of this research work, the questionnaire used can be a good tool for the detection of the PTSD the PP-according to the new definitions of DSM-5.

The prevalence found in other publications is similar to what is reported in our study: in a recently published meta-analysis, the total pre-prevalence rate was 21.94% in all affected populations, including health workers, due to the impact of the COVID-19 pandemic. The meta-analysis mentioned above found no differences in the prevalence between common citizens and health workers [9]. In another systematic review and meta-analysis carried out only in health workers, the prevalence of PTSD was 21.5% during the COVID-19 pandemic [10]. Finally, in research work that analyzed residents involved in the care of patients with COVID-19, the prevalence of possible PTSD was 34.3%; It was found that 21.5% had subclinical PTSD [11].

However, the prevalence found is greater than the one informed in the studies carried out before the pandemic by COVID-19 [12-14]. Infectious disease outbreaks are traumatic events and increase the risk of PTSD in the future in the general population, especially in doctors [15]. Residents have a greater workload, a higher level of exposure to infectious diseases, and longer contact with infected people since they play a fundamental role during the COVID-19 pandemic.

In the present study, an association between PTSD and gender was found women are associated three times more than men in relation to TEPTD. It is well established that this disorder is more prevalent, and more serious and leads to higher comorbidity rates in women: this is due to the fact that female hormones cause greater reactivity of the hypothalamus-hypophysarian-adrenal axis and less stability of the

homeostatic system, which leads to greater vulnerability to PTSD by direct, indirect and epigenetic mechanisms [16, 17]. Genomic studies suggest that women with European or African ancestors have higher inheritance rates of PTSD than men. There is some evidence that some genes involved in PTSD would increase its functioning in specific areas of the brain. For example, a greater expression of the FKBP5 gene has been found, which encodes a chaperone protein for the glucocorticoid receptor, in the dorsolateral prefrontal cortex of women with PTSD.

Residents of medical specialties have a three-time risk of developing PTSD more than residents of surgical specialties. In pre-pandemic research work, Klamen DL et al. (1995) found the highest percentage of PTSD in surgery residents, followed by psychiatry, obstetrics/gynecology, and pediatrics [12]; in a survey of 11000 doctors, and residents in the US, Jackson et al. found no significant differences between specialties [19]. Vance et al. found that internal medicine residents had the highest or for PTSD, followed by gynecology residents; however, risk factors, in that research work, were not related to working conditions [20].

Dissociative disorders consist of the alteration of consciousness, memory, identity, emotion, perception, body representation, motor control, and behavior. Symptoms can be positive (such as identity fragmentation, depersonalization, and derealization) or negative (such as amnesia, aphonia, and paralysis). Dissociation is related to PTSD and conversion disorder [21]. The history of traumatic experiences, such as sexual abuse or negligence and emotional abuse is common. Dissociation symptoms can be somatomorphs (which involve sensory perception and motor control) or psychomorphs (which involve the mind). In the Somatomorphic dissociative symptoms of PTSD, the existential threat leads to an excessive physiological activation response: lacking exhaust options, it can become a "shutdown" response (fainting, immobility, and alexitimia) [22]. In addition, it has been demonstrated a close association between dissociative disorders and conversion [23] and the association between conversion and the history of traumatic experiences. Specific personality traits could also contribute to the propensity to these disorders [24,25]. In this work, only 2% of respondents obtained a positive score for dissociative disorder. Surprisingly, three of them did not obtain positive results for PTSD. Both dissociation and PTSD belong to the same posttraumatic spectrum; for this reason, it is possible that all participants who obtained a positive score for the dissociative disorder have a history of traumatic experiences that could influence those results.

Conclusion

This study has some limitations. First, only 20% of the residents surveyed responded to surveys; therefore, the sample size is not large enough. Secondly, other demographic and personal factors (current and past), apart from the COVID-19 pandemic, could be contributing to the prevalence of PTSD. A structured and face-to-face interview could provide a clearer image of the factors that influence the development of this disorder in this population. However, the results found should draw the attention of the entire health system to plan preventive and therapeutic measures to deal with this situation.

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