EMPIRICAL RESEARCH QUANTITATIVE

Predictors of mental health in healthcare workers during the COVID-19 pandemic: The role of experiential avoidance, emotion regulation and resilience

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Abstract

Aims: This study explores the mediational role of resilience, experiential avoidance and emotion regulation in the levels of anxiety, depression and posttraumatic stress disorder (PTSD) of healthcare workers during the COVID-19 pandemic. Additionally, we explored the association of such levels with personal and professional variables.

Design: Cross-sectional study.

Methods: Healthcare professionals working in Spain ($N=786$) were recruited following a snowball approach in November and December 2021. Resilience, emotion regulation, experiential avoidance, depression, anxiety, PTSD and work-related variables were measured. Mean differences and correlations were computed, and a path analysis with latent variables (PALV) model was tested.

Results: In total, 18.8% of the sample scored above the cut-off score for depression, 24.6% for anxiety and 36.4% for PTSD. Higher resilience and lower experiential avoidance and expression suppression were correlated with better mental health. The PALV model explained 42%–53% of mental health outcomes. Experiential avoidance showed the greatest explanatory power and mediated the impact that stressors had on mental health. Some work-related variables correlated with greater psychological impact. These factors encompassed being a nurse, feeling that their job remained stressful and had not yet returned to its pre-pandemic state and having interacted with individuals facing economic difficulties due to the pandemic, and those who had lost their lives to COVID-19.

Conclusion: Healthcare workers showed high levels of psychological impact during the COVID-19 pandemic. Such impact was predicted from some work-stress variables and the reliance on maladaptive strategies such as experiential avoidance and expressive suppression.

Impact: Training healthcare professionals to use coping strategies incompatible with experiential avoidance may improve their mental health. Additionally, better working

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conditions are fundamental for reducing the impact of critical situations on healthcare workers' mental health.

Patient or Public Contribution: No patient or public contribution.

1 | INTRODUCTION

Healthcare workers (HCWs) were one of the collectives most psychologically affected when the COVID-19 global health crisis occurred, as they experienced very difficult situations, such as the risk of infection, exposure to traumatic conditions, increased workload, scarcity of resources, social isolation, ethical and moral dilemmas and workplace violence. (Alimoradi et al., 2023; Batra et al., 2020; Chirico et al., 2022). The global prevalence of psychological consequences in this collective reached concerning ratios for anxiety (16%–41%), depression (14%–37%) and posttraumatic stress disorder symptoms (PTSD; 18.6%–56.5%); additionally, suicidal thoughts, sleep problems such as insomnia, burnout and other adverse symptomatology have been reported (Chirico et al., 2021; Chutiyami et al., 2021). Reports from Spain are coherent with these findings, providing alarming data such as a prevalence of 46% for depression and 73.6% for PTSD (Luceño-Moreno et al., 2020; Rodríguez-Rey, Garrido-Hernansaiz, & Bueno-Guerra, 2020). Furthermore, a review of longitudinal studies found no consistent decrease in these symptoms as time passed (Umbetkulova et al., 2023).

1.1 | Background

Given health crises' significant negative impact on HCWs' mental health, it is essential to identify the contextual variables that can aggravate or alleviate this impact. Different meta-analyses and systematic reviews have identified risk factors, including work-related characteristics (e.g. being a nurse, working in intensive care unit or emergencies, less working experience, lack of supplies, increased workload, higher contact with COVID-19 and higher fear of infection) and sociodemographic characteristics (e.g. being female, married and a younger age; Alimoradi et al., 2022; Batra et al., 2020; Chutiyami et al., 2021; Umbetkulova et al., 2023). Fortunately, some protective factors have also been identified, such as higher work recognition by family and colleagues (Rodríguez-Rey, Garrido-Hernansaiz, & Bueno-Guerra, 2020) and higher access to psychological resources (Umbetkulova et al., 2023).

While these studies have identified different risk conditions, some are inherent and unavoidable in a global pandemic such as COVID-19. Thus, it is crucial to identify protective psychological factors that can be tackled through interventions, but there are insufficient studies on this matter. Nevertheless, previous findings show that some variables greatly influence the psychological impact experienced by someone involved in an adverse event (e.g. Lin et al., 2022), and these could act as mediational targets in psychological interventions with healthcare workers. For example, resilience, defined as the personal capacity to bounce back or recover from stressful events (Smith et al., 2008), has been identified as one of the main protective factors of negative psychological consequences in the face of stressful events (Hu et al., 2015). Consistently, the systematic review on HCWs' mental health during COVID-19 by Baskin and Bartlett (2021) found that resilience had a protective effect. Furthermore, it was identified as an attenuating mediator between COVID-19 stressors and their impact on mental health for HCWs (Yıldırım et al., 2022).

Emotion regulation (ER) is also involved in how adverse events are faced and in the later development of psychological consequences (e.g. PTSD). It refers to the efforts made (consciously or not) to affect the likelihood, duration, or intensity of an emotion (Gross, 1998). Two are the most studied ER strategies: Cognitive reappraisal (which involves interpreting a possibly emotion-eliciting situation in a way that transforms its emotional impact) and expressive suppression (which involves inhibiting emotion expressive behaviour; Gross & John, 2003). While the former strategy has been systematically related to higher positive affect in daily life (i.e. a higher tendency to focus on and experience pleasant emotions), the latter was associated with higher negative affect (Boemo et al., 2022). In accordance, a meta-analysis found that expressive suppression was associated with higher PTSD, whereas cognitive reappraisal did not show any association (Seligowski et al., 2015). Studies carried out with HCWs during the COVID-19 pandemic found a link between higher anxiety, depression and PTSD, a greater use of expressive suppression and a lower use of cognitive reappraisal (Liang et al., 2022). Expressive suppression has been identified as a mediator between the work-related stressors of first responders and PTSD, anxiety and depression (Kshtriya et al., 2022).

In addition to resilience and ER, experiential avoidance (EA) is also related to worse mental health outcomes in the aftermath of adverse events (Seligowski et al., 2015). It refers to the reluctance to stay in contact with aversive personal experiences (e.g. emotions and thoughts) and the actions aimed at modifying the frequency or form of these experiences, even if they generate behavioural damage (Hayes et al., 2004). In the context of COVID-19, a longitudinal study carried out in Spain with the general population found that EA and adverse mental health symptomatology were positively related

and that both increased over time (Hernández-López et al., 2021). These results are in line with those of Ferreira et al. (2021), who found that EA was the strongest predictor of stress, anxiety, depression, negative emotions and loneliness when it came to dealing with the COVID-19 pandemic. Although this has not been widely investigated in HCWs, some studies reported that EA mediated the impact that stress had on mental health consequences (PTSD, anxiety and depression) during the COVID-19 pandemic (Bonilla-Sierra et al., 2021; Bruno et al., 2022).

In sum, HCWs have been exposed to adverse events during the COVID-19 pandemic that increased the risk of mental health issues (e.g. exposure to traumatic experiences or increased workload). In this regard, it is important to confirm which contextual and work-related factors contribute to worse mental health and which psychological variables can alleviate the impact of adverse events, specifically those that can be modified through psychological interventions.

2 | THE STUDY

2.1 | Aims

The goals of this study were (1) to assess the impact of the COVID-19 pandemic on the mental health of a Spanish sample of HCWs in terms of depression, anxiety, and PTSD, (2) to examine the relationship of the psychological, demographic, and work-related variables previously mentioned with mental health and (3) to develop a comprehensive predictive model to test the mediational role that resilience, ER and EA may have between work-related variables and mental health. The main novelty of the present study is the exploration of the conjoint effect of resilience, ER, and EA in the prediction of anxiety, depression and PTSD. Given that these are modifiable variables, this study will provide relevant clues for the design of psychological interventions in health crises. Additionally, the present study explores HCWs' mental health during the later stages of the COVID-19 pandemic, for which data are scarcer compared with studies conducted in the pandemic's early stages (Wu et al., 2021).

3 | METHODS

3.1 | Design

The present study is an ex post facto, cross-sectional study. Data were collected from a sample of HCWs in Spain.

3.2 | Participants

Inclusion criteria were to be working as a HCW (nursing, nursing assistant, or physician) in Spain during the COVID-19 crisis at the time of the data collection period (November 2021) and to be at least

18 years old. Seven hundred and eighty-six HCWs, aged between 22 and 67 years old (M = 44.53, SD 11.14) participated. Most of them were women (78.1%), married or cohabiting with a partner (71%) and had at least one child (60.1%; see Table 1).

3.3 | Data collection

Data were collected on LimeSurvey, an online platform, during November and December 2021. The questionnaire was distributed by email and social networks (Twitter, Instagram, Facebook, WhatsApp and Telegram), following a snowball approach. We contacted different professional networks, associations, and hospitals and asked them to spread the questionnaires. The information and instruments presented below were included in the online questionnaire.

3.4 | Instruments

3.4.1 | Demographic information

Participants reported their gender, age, marital status and number of children.

3.4.2 | Work-related information

Participants reported their position (i.e. nurse, physician and nursing assistant), years of experience working in healthcare, and the unit where they usually worked (e.g. primary care, intensive care unit and hospital emergency unit). They also reported the population group with whom they worked (adults, children or both) and whether they had to change their work unit because of the pandemic.

3.4.3 | Contact with the COVID-19 in the working environment

Participants indicated the degree to which they had contact with (1) people experiencing social or economic difficulties as a result of COVID-19, (2) patients with COVID-19, (3) critical patients with COVID-19, (4) patients who had died of COVID-19 and (5) relatives of very critical or deceased COVID-19 patients. The response scale ranged from 1 (*I've had no contact or some isolated contact*) to 5 (*I've had daily contact*).

3.4.4 | Experience of the pandemic in the working environment

Respondents indicated the degree to which their job (1) had been more difficult than usual during the COVID-19 pandemic, (2) had

TABLE 1 Association of sociodemographic variables and mental health (N = 786).

Variables	N (%)	Depression				Anxiety				PTSD			
		M (SD)	$t/F^†$	p	$g/\eta^{2†}$	M (SD)	$t/F^†$	p	$g/\eta^{2†}$	M (SD)	$t/F^†$	p	$g/\eta^{2†}$
Gender‡			−2.96	.003	.26		−4.41	<.001	.38		−3.10	.002	.27
Female	614 (78.10)	1.78 (1.63)				2.15 (1.59)				2.00 (1.76)			
Male	165 (21.00)	1.37 (1.42)				1.55 (1.46)				1.53 (1.66)			
I would rather not say	4 (.50)	1.25 (.96)				1.75 (1.26)				2.75 (1.71)			
Other	3 (.40)	1.67 (1.53)				1.00 (1.00)				1.67 (.58)			
Marital status			4.17	.01	.01		$5.72^§$	.003	.01		4.09	.01	.01
Married/cohabiting with a partner	558 (71.00)	1.60 (1.52)a				1.98 (1.53)ab				1.84 (1.72) a			
Single	162 (20.60)	2.01 (1.75)b				2.28 (1.66)a				2.22 (1.80)b			
Separated/divorced	62 (7.90)	1.63 (1.59)ab				1.52 (1.47)b				1.60 (1.64)a			
Children			4.01	<.001	.29		$4.85^§$	<.001	.36		3.31	.001	.24
No	314 (39.90)	1.97 (1.72)				2.35 (1.65)				2.15 (1.75)			
Yes	472 (60.10)	1.51 (1.47)				1.79 (1.49)				1.74 (1.72)			

	M (SD)	Depression		Anxiety		PTSD	
		Pearson's r	p	Pearson's r	p	Pearson's r	p
Age	44.53 (11.14)	−.11	.002	−.18	<.001	−.18	<.001

†Differences in mean level between categories of dichotomous variables were assessed via t-test, and Hedges' g effect size statistic was obtained (interpretation: negligible <.20 <small <.50 <medium <.80 <large). For multiple-category variables, one-way ANOVAs were used, and categories with a different superscript letter show a significant difference between them in the psychological impact variable mean. In these cases, the effect size was assessed via η^2 (interpretation: negligible <.01 <small <.06 <medium <.14 <large).

‡For this variable's comparison, the categories with a N <20 were not included.

§Homoscedasticity could not be assumed for these variables. Thus t-test results adjusted for non-homogeneous variances were used. In the case of ANOVAs, post hoc Games-Howell tests were used.

returned to how it was before the pandemic started, (3) had been stressful during the pandemic and (4) had been recognized by others (i.e. bosses, colleagues, patients and family members) during the pandemic, as well as (5) the extent to which they felt satisfied with the work they had done during the pandemic and (6) the degree of fear of COVID-19 infection. The response for each item ranged from 1 to 5.

3.4.5 | Psychological support

Respondents indicated whether they had received psychological treatment since the beginning of the pandemic, whether they were already receiving it before it started, or if they would have liked to receive it.

3.4.6 | The 4-item Patient Health Questionnaire-4 (PHQ-4; Cano-Vindel et al., 2018)

It is a 4-item screening scale for depression and anxiety, with two items for each subscale. Participants rated each item on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*nearly every day*). A total score of 3 is taken as a cut-off point for a possible major depressive disorder or anxiety disorder. In this study, a fifth item from the PHQ-9 (Kroenke et al., 2001) assessing suicidal ideation was shown to those participants who rated 1 or more in either of the two items of the depression subscale. The internal consistency of the scores was good for all the subscales in this study ($\alpha = .87$ for depression; $\alpha = .85$ for anxiety; $\alpha = .89$ for the whole PHQ-4; $\alpha = .83$ for the complete scale, including the suicidal ideation item).

3.4.7 | Primary care PTSD screen for DSM-5 (The PC-PTSD-5; Prins et al., 2016)

This 5-item screening test for PTSD, with a *yes/no* response format, is a measure developed specifically for primary care settings. The total score is computed as the sum of the *yes* responses. The optimal sensitive cut-off score to detect possible PTSD is 3 (Prins et al., 2016). As this questionnaire was not available in Spanish, it was back-translated for this study. In the current sample, the scores showed adequate internal consistency ($\alpha = .78$).

3.4.8 | Brief resilience scale (BRS; Rodríguez-Rey et al., 2016; Smith et al., 2008)

This 6-item self-report scale measures the personal capacity to recover from stressful events (Smith et al., 2008) on a 5-point response scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A higher score indicates greater resilience. The scores showed good internal consistency in this study ($\alpha = .83$).

3.4.9 | Acceptance and Action Questionnaire (AAQ-II; Ruiz et al., 2013)

The AAQ-II measures EA through seven items rated on a 7-point Likert scale (1=*never true*; 7=*always true*). Higher scores indicate greater psychological inflexibility. The internal consistency of the scores was excellent in the current study ($\alpha = .92$).

3.4.10 | Emotion Regulation Questionnaire (ERQ; Cabello et al., 2013; Gross & John, 2003)

This two-factor self-report scale comprises 10 items rated on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). It assesses cognitive reappraisal and expressive suppression. The scores showed good internal consistency in this study ($\alpha = .82$ for suppression; $\alpha = .80$ for reappraisal).

3.5 | Data analysis

The use of parametric tests in this study was justified due to the substantial size of the sample, consisting of 786 participants. This large sample size ensured that the data collected were robust enough to meet the assumptions of parametric statistical tests. Descriptive statistics were obtained for the sociodemographic, work-related, personal, health and mental health variables. The degree to which mental health was related to the rest of the variables was examined, using bivariate correlations for ordinal (Spearman's ρ) and continuous (Pearson's r) variables. When comparing two groups for categorical variables (e.g. gender), Student's t-tests for independent samples were employed, while ANOVA was utilized when comparing three or more groups. In the latter case, Tukey *post-hoc* analyses were used when variances were homogeneous and Games-Howell when they were not. Effect sizes were evaluated with Hedges' g for Student's t-tests and η^2 for ANOVAs. These analyses were performed using SPSS Statistics 26 for Windows.

A Path Analysis with Latent Variables (PALV) was conducted using structural equation modelling to test a model with mental health variables (anxiety, depression, and PTSD) as criteria and the ordinal or continuous variables showing a correlation with mental health of at least .20 in the previous analyses as predictors. Work satisfaction and recognition variables were grouped into a single latent variable, as were the variables concerning work-related stressors. Personal resources (i.e. resilience, EA and ER) were hypothesized as mediators since, as argued before, these variables mediate the relationship between a potentially stressful situation (such as the COVID-19 pandemic) and its impact on mental health. The model was tested using maximum likelihood mean–variance adjusted (MLMV) as the estimator. The goodness of fit was assessed through absolute, incremental and non-centrality fit indices (SRMR- standardized root mean square residual, CFI- comparative fit index, TLI- Tucker-Lewis index, and RMSEA- root mean square error of approximation). CFI and TLI > .90,

RMSEA < .05, and SRMR < .08 indicate a good fit (Hair, 2014). The PALV analysis was performed using Mplus 7 for Windows.

3.6 | Ethical considerations

This study was approved by the ethics committee of Universidad Pontificia Comillas on 20 March 2020 (27-20). All participants provided their informed consent before accessing the questionnaire.

4 | RESULTS

4.1 | Mental health prevalence

The proportion of HCW who scored above the cut-off was 18.8% for depression (M = 1.69; SD 1.59), 24.6% for anxiety (M = 2.02; SD 1.58), and 36.4% for PTSD (M = 1.9; SD 1.74). Furthermore, 70.9% of the participants scored 1 or above 1 on one of the two depression items, with 2.03% (N = 16) indicating that they had suicidal ideation most days or almost every day.

4.2 | Mental health and sociodemographic variables

Table 1 shows the descriptive data of the sociodemographic variables and their association with depression, anxiety, and PTSD scores. Statistically significant differences were found concerning gender and family situation. Higher levels of depression, anxiety, and PTSD were found among women (compared to men), single HCWs (compared to those married/cohabiting and those separated/divorced) and HCWs who had no children (compared to those who did). All the differences found had a small effect size. Regarding age, a significant inverse relationship emerged with depression, anxiety and PTSD, although weak in all cases.

4.3 | Mental health and work-related variables

Table 2 shows the relationship between mental health and work-related variables. Nurses and nursing assistants showed significantly worse mental health than any of the other professionals considered, and those working in hospital emergency, hospital ward and primary care scored significantly higher on anxiety than those in occupational health. This latter group scored significantly lower than the rest on PTSD. No differences emerged for depression by the work unit, but those who had to change their usual work unit due to COVID-19 showed significantly higher levels of depression than those who did not. The effect sizes were small in all cases. Years of work experience were negatively (and weakly) associated with anxiety, depression and PTSD. No significant differences were found between those who worked with adults, children or both.

4.4 | Mental health, contact with COVID-19 and experiences of the pandemic at work

Table 3 shows HCW's contact with COVID-19 at work, how they experienced the pandemic and the relationship of these two factors (i.e. contact and experience) with mental health. More frequent contact with people with social/economic difficulties due to COVID-19 was related to higher depression, anxiety and PTSD. Anxiety and PTSD were also higher among those who had had more contact with critical patients or patients who died of COVID-19. This last variable was the one most associated with PTSD. Regarding the experience of the pandemic, most HCWs thought that their work had been more stressful and difficult during the pandemic than usual, and many thought it had not returned to how it was before the pandemic. These perceptions were significantly related to higher depression, anxiety, and PTSD. Moreover, most participants felt that their work during the pandemic had not been adequately recognized, but they were satisfied with the job conducted. Perceiving that their work had been recognized and being satisfied with their own performance were significantly associated with lower depression, anxiety, and PTSD. Concerning fear of COVID-19, a significant and positive relationship emerged with depression, anxiety and PTSD, weak in all cases.

4.5 | Mental health and psychological support

Table 4 shows the differences in mental health between participants who received therapy since the COVID-19 pandemic started and those who did not. More than half of the sample did not receive psychological treatment, and more than a quarter did not receive it but would have liked to. Slightly more than 10% had received psychological treatment, and an additional 3.7% had started psychological therapy before the pandemic began. Participants who had not received psychological care scored significantly lower in depression, anxiety and PTSD than the rest. The effect size was large for PTSD and anxiety, whereas it was medium for depression.

4.6 | Mental health and psychological resources

Table 5 shows the correlations between mental health and resilience, ER and EA. Depression, anxiety and PTSD were significantly associated with greater experiential avoidance (moderate–strong correlations), greater expressive suppression (weak correlations) and lower resilience (moderate correlations). Cognitive reappraisal did not show any significant association.

4.7 | Path analysis with latent variables

The following variables were included in the PALV model because of their association greater than .20 with mental health variables:

TABLE 2 Association of working-related variables and mental health (N = 786).

Variables	N (%)	Depression M (SD)	t/F[†]	p	g/η²[†]	Anxiety M (SD)	t/F[†]	p	g/η²[†]	PTSD M (SD)	t/F[†]	p	g/η²[†]
Profession			3.98	.02	.01		3.28[§]	.04	.01		6.12	.002	.02
Nurse	363 (46.20)	1.74 (1.62)[ab]				2.16 (1.64)[a]				2.09 (1.78)[a]			
Physician	337 (42.90)	1.54 (1.58)[a]				1.86 (1.57)[b]				1.65 (1.71)[b]			
Nursing assistant	86 (10.90)	2.06 (1.42)[b]				2.02 (1.27)[ab]				2.09 (1.61)[ab]			
Work unit[‡]			1.89	.07	.02		2.11	.04	.02		4.56[§]	<.001	.04
Hospital ward	198 (25.20)	1.74 (1.53)				2.05 (1.61)[a]				2.04 (1.75)[a]			
Primary care	170 (21.60)	1.88 (1.57)				2.18 (1.61)[a]				1.88 (1.67)[a]			
Specialized outpatient services	91 (11.60)	1.62 (1.53)				2.04 (1.43)[ab]				1.84 (1.75)[a]			
Hospital emergency	86 (10.90)	1.97 (1.77)				2.22 (1.60)[a]				2.36 (1.71)[a]			
Intensive care unit	78 (9.90)	1.64 (1.52)				2.13 (1.68)[ab]				2.22 (1.88)[a]			
Occupational health	55 (7.00)	1.09 (1.58)				1.31 (1.46)[b]				.87 (1.29)[b]			
Surgery	22 (2.80)	1.68 (1.91)				1.95 (1.68)[ab]				1.82 (1.84)[a]			
Elderly home	20 (2.50)	1.85 (1.42)				1.90 (1.25)[ab]				2.50 (1.85)[a]			
Out-of-hospital emergency	17 (2.20)	1.35 (1.50)				1.29 (1.49)				1.53 (1.70)			
Population group of work			.93	.39	.002		1.12	.33	.003		1.34	.26	.003
Adult population	539 (68.60)	1.64 (1.54)				1.99 (1.56)				1.84 (1.70)			
Children	50 (6.40)	1.84 (1.73)				2.34 (1.78)				1.90 (1.74)			
Both	197 (25.10)	1.80 (1.70)				1.99 (1.58)				2.08 (1.85)			
Change of work unit due to the COVID-19			-2.78	.006	.22		-1.27	.21	.10		-1.95	.05	.15
No	563 (71.60)	1.59 (1.54)				1.97 (1.57)				1.83 (1.72)			
Yes	223 (28.40)	1.94 (1.70)				2.13 (1.60)				2.09 (1.79)			

	M (SD)	Depression Pearson's r	p	Anxiety Pearson's r	p	PTSD Pearson's r	p
Years of experience as a healthcare worker	19.31 (10.49)	-.10	.006	-.14	<.001	-.16	<.001

[†]Differences in mean level between categories of dichotomous variables were assessed via *t*-test, and Hedges' *g* effect size statistic was obtained (interpretation: negligible <.20 <small <.50 <medium <.80 <large). For multiple-category variables, one-way ANOVAs were used, and categories with a different superscript letter show a significant difference between them in the psychological impact variable mean. In these cases, the effect size was assessed via *η²* (interpretation: negligible <.01 <small <.06 <medium <.14 <large).

[‡]For this variable's comparisons, the categories with a *N* <20 were not included.

[§]Homocedasticity could not be assumed for these variables. Thus, *t*-test results adjusted for non-homogeneous variances were used. In the case of ANOVAs, post hoc Games-Howell tests were used.

TABLE 3 Mean and standard deviations of the types of contact with COVID-19 at work, experiences of the COVID-19 pandemic at work and their Spearman correlation with mental health (N = 786).

		Spearman's ρ		
	M (SD)	Depression	Anxiety	PTSD
Contact with COVID-19 in the working environment				
With people who've experienced social/economic difficulties due to COVID-19	3.13 (1.52)	.13***	.16***	.23***
With patients with COVID-19	3.94 (1.38)	.03	.06	.19***
With critical patients with COVID-19	3 (1.65)	.04	.07*	.17***
With patients who have died of COVID-19	2.57 (1.54)	.05	.07*	.21***
With relatives of very critical or deceased COVID-19 patients	2.66 (1.46)	.03	.07	.15***
Extent to which healthcare workers…				
Think their work has been more difficult than usual	4.36 (.91)	.12**	.16***	.25***
Think their work has returned to how it was before	2.60 (1.30)	−.23***	−.21***	−.19***
Scored how stressful their work was	4.27 (.97)	.26***	.29***	.37***
Feel that their work has been recognized by bosses, colleagues, patients, and family members	2.46 (1.36)	−.24***	−.17***	−.17***
Are satisfied with the work they have done during the pandemic	3.98 (1.07)	−.21***	−.12**	−.13***
Fear COVID-19	2.86 (1.14)	.16***	.18***	.26***

*p < .05. **p < .01. ***p < .001.

Work-related stressors (contact with people with economic/social difficulties, contact with patients who died of COVID-19, perception of higher stress and more difficulties at work due to the pandemic, degree to which the job had returned to normal and fear of COVID-19), work recognition and satisfaction (perception of recognition of their work and their satisfaction with the job done), resilience, EA and expressive suppression. The last three were hypothesized as mediators, as shown in Figure 1.

In the model, non-significant paths were deleted to achieve the most parsimonious solution. Consequently, the direct paths from expressive suppression and work recognition and satisfaction to depression were removed. Resilience was removed from the model, as it did not help explain any of the mental health variables in the presence of the rest of the predictors. The paths from work-related stress and work recognition and satisfaction to expressive suppression were removed. Thus, neither resilience nor expressive suppression fulfilled the role of mediators.

The final model is depicted in Figure 2. It showed a good fit to the data (RMSEA = .04, CFI = .93, TLI = .93, SRMR = .05) and explained 53% of anxiety, 49% of depression and 42% of PTSD. Higher anxiety and PTSD were predicted by lower work recognition and satisfaction and higher work-related stress, EA and expressive suppression. Higher depression was predicted by higher work-related stress and EA. EA was the variable that contributed the most to predicting mental health and was the only one that acted as a mediator between the two predictors and mental health outcomes. It partially mediated the relationship between work-related stress and anxiety, PTSD and depression. Thus, the negative impact work-related stress had on mental health was partially mediated by EA. Second, EA also mediated the relationship between work recognition and satisfaction with anxiety,

PTSD (partial mediation) and depression (full mediation). In this case, the protective effect work recognition and satisfaction had on mental health was through its negative relation with EA. The direct, indirect and total effects of work-related stress and work recognition and satisfaction on mental health are reported in Table 6. The total effect on mental health ranged from .26 to .45 for work-related stress and from −.24 to .41 for work recognition and satisfaction.

5 | DISCUSSION

The first objective of this study was to assess the negative impact of the COVID-19 pandemic on the mental health of HCWs. Our results showed that 18.8% of the sample scored above the cut-off for depression and 24.6% for anxiety at an advanced stage of the pandemic (about 2 years from the outbreak). These values show a more favourable picture than data from HCWs at the outbreak of the pandemic, when both depression and anxiety had a prevalence of about 31%–35% (Batra et al., 2020). This trend towards improved mental health may be explained because depression and anxiety tend to decrease over time (Rhebergen et al., 2011). Another reason could be that the work conditions for HCWs improved over those 2 years, as during the outbreak of the pandemic the disease was still unknown, the healthcare system was saturated, there were no treatment protocols, no protective equipment for HCWs and no vaccines. Nonetheless, the prevalence of these disorders among Spanish HCWs at a later stage of the pandemic was still high and thus should not be overlooked. Indeed, 16 people showed suicidal ideation, which despite representing a small percentage of the sample, is very clinically relevant.

TABLE 4 Association between having received psychological care at any time since the beginning of the pandemic and mental health (N = 786).

	N (%)	Depression M (SD)	Depression F[†]	Depression p	Depression η²[†]	Anxiety M (SD)	Anxiety F[†]	Anxiety p	Anxiety η²[†]	PTSD M (SD)	PTSD F[†]	PTSD p	PTSD η²[†]
Received psychological treatment			33.08[‡]	<.001	.11		41.17[‡]	<.001	.14		47.05[‡]	<.001	.15
Yes	101 (12.80)	2.34 (1.66)[a]				2.86 (1.61)[a]				2.81 (1.78)[a]			
Yes, I was receiving it before	29 (3.70)	2.48 (1.55)[a]				2.93 (1.60)[a]				2.59 (1.78)[a]			
No	430 (54.70)	1.21 (1.34)[b]				1.50 (1.32)[b]				1.29 (1.49)[b]			
No, but I would have liked to	226 (28.80)	2.22 (1.70)[a]				2.51 (1.65)[a]				2.58 (1.71)[a]			

[†]Differences in mean level between multiple-category variables were assessed via one-way ANOVAs, categories with a different superscript letter show a significant difference between them in the psychological impact variable mean. In these cases, the effect size was assessed via η^2 (interpretation: negligible <.01 < small <.06 < medium <.14 < large).

[‡]Homoscedasticity could not be assumed for these variables, thus post hoc Games-Howell tests were used.

TABLE 5 Pearson' correlations between psychological variables and mental health (N = 786).

	Depression	Anxiety	PTSD
Resilience	−.39***	−.42***	−.32***
Cognitive reappraisal (ER)	−.07	−.07	.01
Expressive suppression (ER)	.29***	.19***	.20***
Experiential avoidance	.62***	.61***	.46***

***$p < .001$.

Regarding PTSD, 36.4% of participants scored above the cut-off. Contrary to depression and anxiety, PTSD seems to have worsened since the initial stages of the pandemic, as the meta-analysis by Batra et al. (2020) found a pooled prevalence of 11.4% of the sample showing PTSD symptoms in the initial stage of the COVID-19 pandemic. This increase could reflect the development of delayed PTSD (Utzon-Frank et al., 2014). Another plausible reason relates to the fact that COVID-19 was a chronic stressor to which healthcare workers were exposed. Research shows that prolonged exposition to a stressor relates to higher PTSD in contrast with a more acute stressor that does not last over time (Maeng & Milad, 2017).

The second goal of this study was to examine how the demographic and work-related variables were associated with the impact of the COVID-19 pandemic on the mental health of HCWs. Concerning the demographic variables, in line with previous studies, being male, married or living with a partner, older and having children acted as protective factors against mental health disorders (Batra et al., 2020; Chutiyami et al., 2021; Umbetkulova et al., 2023). However, having children and being married also appeared as risk factors for anxiety in a meta-review (Chutiyami et al., 2021). Additional variables may have an influence on anxiety, such as social isolation when living alone or fear of contagion for one's loved ones (Batra et al., 2020). However, for the latter, this fear may have decreased in the later stages of the pandemic, which could explain our study results.

As for work-related variables, the work unit was a relevant factor. The highest scores for depression, anxiety, and PTSD were found in professionals working at units where they tended to have greater contact with more serious and shocking situations, such as the hospital emergency unit. Moreover, HCWs with more frequent and close contact with COVID-19 patients (i.e. nurses and nursing assistants) also showed the highest scores for depression, anxiety, and PTSD. Being closer to the virus and seeing its consequences may increase the fear associated with it. In fact, fear of COVID-19 was correlated with worse mental health, especially PTSD. The more frightening COVID-19 is perceived, the more likely one is to think of the virus as potentially fatal, which explains its elevated association with PTSD (Alimoradi et al., 2022). On the other hand, more years of experience working as a healthcare professional were linked to lower depression, anxiety, and PTSD, acting as a protective factor. More experienced HCWs would have more resources available to overcome difficulties. All of these results
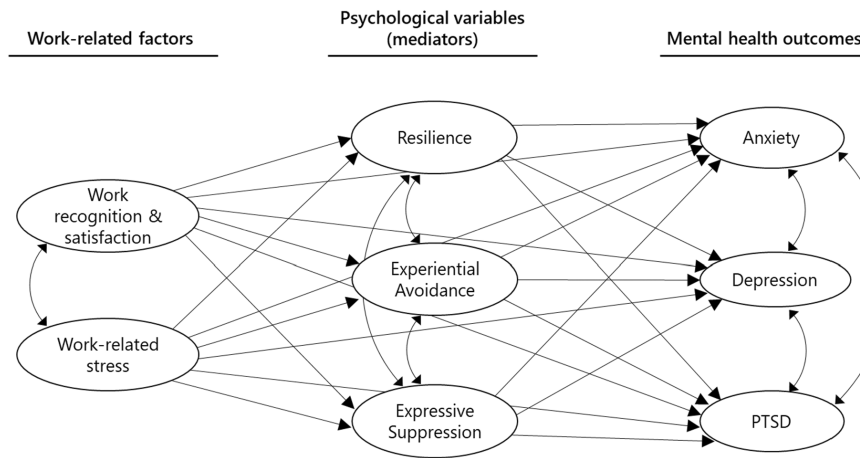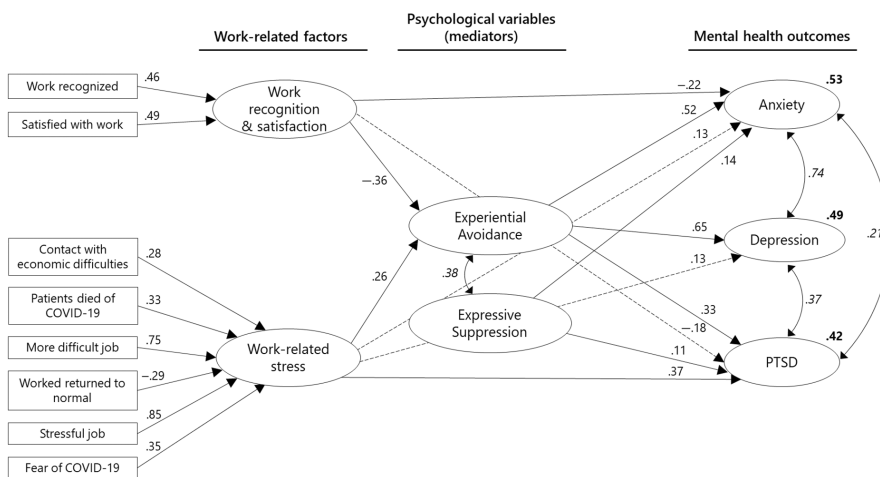
FIGURE 1 Initial model tested through PALV.

FIGURE 2 Final model with standardized regression weights, correlations and proportion of explained variance. Correlations are depicted in italics. Proportions of explained variance are depicted in boldface. Paths that visually pass behind another variable are depicted with a dashed line for visual clarity and represent the direct effect of the origin variable on the final variable.

TABLE 6 Direct, indirect and total effects in the final PALV.

Predictor	Effects[†]	Mental health (criterion)		
		Depression	Anxiety	PTSD
Work-related stress	Direct	.13	.13	.37
	Indirect	.17	.13	.08
	Total	.30	.26	.45
Work recognition and satisfaction	Direct		−.22	−.18
	Indirect	−.24	−.19	−.12
	Total	−.24	−.41	−.30

[†]Indirect effects involve experiential avoidance as a mediator. All effects were $p < .001$, except the direct effect of work recognition and satisfaction on PTSD, which was $p = .004$.

are congruent with those found globally in meta-analyses and systematic reviews, indicating that even in the late stages of the pandemic, the predictors for mental health remained the same (Batra et al., 2020; Chutiyami et al., 2021; Umbetkulova et al., 2023). Finally, HCWs receiving psychotherapy showed worse mental health, in line with previous studies (Rodríguez-Rey et al., 2022), indicating that those asking for psychological help are the most affected by the pandemic.

Moving on to the experience of the pandemic in the workplace, the belief that their job was still not back to pre-pandemic normality and perceiving it as highly stressful were risk factors for poorer mental health. This study also replicated Rodríguez-Rey, Garrido-Hernansaiz, and Bueno-Guerra (2020) results with frontline workers in Spain, finding that the feeling that one's work is recognized and being satisfied with the job done were protective factors. Concerning the types and frequency of contact with COVID-19 at work, a higher frequency was associated with greater PTSD, while it barely showed any correlation with depression and anxiety. In particular, contact with patients who died from COVID-19 was the type of contact most correlated with PTSD, in line with previous studies (Rodríguez-Rey, Garrido-Hernansaiz, & Bueno-Guerra, 2020). Furthermore, contact with people who had experienced social/economic difficulties as a result of COVID-19 was the only type of contact with COVID-19 that was correlated with all the measures of mental health. This might have to do with the high prevalence of population concerned by social/economic difficulties derived from the COVID-19 pandemic (Rodríguez-Rey, Garrido-Hernansaiz, & Collado, 2020). These data highlight the impact that working conditions can have on well-being and the detrimental effect of the COVID-19 pandemic on HCWs' work conditions and mental health.

The third goal this study pursued was to develop a comprehensive predictive model to test the mediational role of resilience,

EA and ER. Our results showed that the strongest predictor for mental health was EA. The more HCWs tried not to stay in contact with their discomfort, the greater the adverse impact on their mental health. This result is in accordance with previous literature (Ferreira et al., 2021; Hernández-López et al., 2021), reinforcing Hayes' (2004) theory: EA may appear effective in the short term (as it helps to temporarily reduce the discomfort generated by an aversive experience), but it becomes a limitation in the person's life in the long term. Furthermore, EA fully mediated the relationship between contextual work-related stressors and mental health, in line with previous literature reporting that EA mediated the effect that stress had on anxiety and depression (Bonilla-Sierra et al., 2021; Bruno et al., 2022). Furthermore, EA also mediated the relationship between mental health and work recognition and satisfaction, suggesting that work recognition facilitated being in contact with emotions and thus reduced symptomatology. However, it is also possible that those with low EA were able to identify and experience work recognition and satisfaction to a greater extent.

Resilience was the personal resource that showed the second strongest correlation with mental health, coherently with previous literature, including studies carried out with HCW during the COVID-19 pandemic (Hu et al., 2015; Luceño-Moreno et al., 2020; Yıldırım et al., 2022). However, resilience was no longer a relevant predictor when considered with the rest of the variables in the PALV analysis. Unlike other studies, resilience did not mediate the relationship between stressors and mental health (Yıldırım et al., 2022). This can be explained because of resilience's close relationship with EA (their correlation coefficient was .53 in the initial model tested depicted in Figure 1) coherently with other studies carried out during the COVID-19 pandemic with HCWs (Jiménez-Fernández et al., 2022). Thus, it seems that the attenuating effect resilience could have in the relationship between stressors and mental health could be explained by the use of more adaptive strategies not involving EA. However, further research is needed to study this.

Finally, concerning ER, expressive suppression was related to anxiety, depression and PTSD, while cognitive reappraisal showed no relation with mental health. The detrimental effect of the use of expressive suppression found in our study is consistent throughout the literature (Kshtriya et al., 2022; Seligowski et al., 2015). This suggests that, much like EA, expressive suppression seems to be a maladaptive strategy in the long term, leading to worse mental health (Gross & John, 2003; Liang et al., 2022; Seligowski et al., 2015). However, it did not behave as a mediator between stressors and mental health in our study, while it did in previous studies (Kshtriya et al., 2022), so further research is needed to clarify this relation.

The collective findings of this study revealed some risk factors to attend to and some pathways for intervention in healthcare workers who face critical situations such as the COVID-19 pandemic. First, special attention should be paid to the first-line HCWs who worked in units like primary care, ICU or emergencies, as these HCWs are still the most vulnerable, particularly nurses of a younger age with fewer years of experience. Second, it is likely that HCWs could benefit from receiving psychological treatment. In light of our findings, a possible therapeutic approach would be Acceptance and Commitment Therapy as one of its most important aims is to reduce EA, that is, to teach the person to create a meaningful life by accepting the pain that inevitably comes with it (Hayes et al., 2004). Furthermore, it appears that Acceptance and Commitment Therapy is effective in reducing symptomatology in HCWs during the COVID-19 pandemic (Otared et al., 2021). In addition, it would be convenient to include other elements in therapy that help build resilience and promote the use of more adaptive ER strategies instead of expressive suppression. Third, policymakers and human resources departments at healthcare institutions should find ways to reduce work stress and help improve working conditions, as prior literature points out (e.g. Nucera et al., 2023). Also, given the difficult access to psychological treatment and the existent reluctance to ask for help, brief courses aimed at promoting psychological resources and self-care should be offered in healthcare centres. Frequent meetings where professionals discuss their daily struggles could also be implemented to reduce EA. Thus, better and easier access to psychological care resources should be promoted by healthcare centres. Finally, protective measures alleviating COVID-19's impact on health (e.g. vaccination and other protective behaviours such as the limitation of social events; Beccia et al., 2023; Kar et al., 2023) need to be implemented and promoted with adequate communication strategies by the authorities.

5.1 | Limitations

Regarding the study limitations, the online recruitment of the sample followed a snowball technique, which may have influenced data collection in such a way that the sample may not adequately represent the characteristics and distribution of the population. For instance, male participants represented only 21%. While there is a substantially higher proportion of women in the health sector, the findings of this study should only be generalized to male HCWs with great caution. Finally, this cross-sectional study does not allow for the establishment of cause-effect relationships, which should be the aim of future longitudinal and experimental research. Furthermore, the study focused on a specific set of variables and factors, and there may be other unmeasured variables that could influence the outcomes or associations studied.

6 | CONCLUSION

Based on our findings, it appears evident that implementing targeted interventions focused on teaching HCWs effective emotional regulation and coping strategies that discourage experiential avoidance may hold promise in improving their enduring mental health challenges, persisting even 2 years after the initial COVID-19 outbreak. By equipping HCWs with adaptive tools to confront and manage

stressors, healthcare organizations can potentially enhance their well-being and resilience in the face of ongoing and future challenges.

Furthermore, it is essential to underscore the critical role of improving working conditions as an integral component of safeguarding the mental health of HCWs. Adequate staffing levels, access to necessary personal protective equipment, supportive work environments, and comprehensive mental health support systems are paramount in mitigating the negative consequences of the prolonged stressors faced by HCWs.

Nevertheless, implementing such interventions and improvements in working conditions may require substantial resources and commitment from healthcare institutions and policymakers. Therefore, further research is warranted to assess the feasibility and efficacy of these strategies in different healthcare settings and to guide evidence-based policy decisions. Conducting longitudinal studies and employing rigorous experimental designs can offer further evidence of the causal connections between these interventions and the mental health outcomes of HCWs over time.

AUTHOR CONTRIBUTIONS

Made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data: R.R-R., M.G.C., P.C-C., S.C., H.G-H. Involved in drafting the manuscript or revising it critically for important intellectual content: R.R-R., M.G.C., P.C-C., S.C., R.C-C., A.C., H.G-H. Given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content: R.R-R., M.G.C., P.C-C., S.C., R.C-C., A.C., H.G-H. Agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved: R.R-R., M.G.C., P.C-C., S.C., R.C-C., A.C., H.G-H.

CONFLICT OF INTEREST STATEMENT

The authors declared no conflict of interest.

PEER REVIEW

The peer review history for this article is available at https://www.webofscience.com/api/gateway/wos/peer-review/10.1111/jan.16122.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

a. The authors have checked to make sure that our submission conforms as applicable to the Journal's statistical guidelines.

b. There is a statistician on the author team and state which author (Helena Garrido-Hernansaiz).

c. The author(s) affirm that the methods used in the data analyses are suitably applied to their data within their study design and context, and the statistical findings have been implemented and interpreted correctly.

d. The author(s) agrees to take responsibility for ensuring that the choice of statistical approach is appropriate and is conducted and interpreted correctly as a condition to submit to the Journal.

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