

Resilience and risk factors associated to depressive symptoms in Mexican healthcare workers during the Covid-19 pandemic

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Abstract

Objective. Report the prevalence of depression, resilience, and risk factors among healthcare workers (HCW) during Covid-19. **Materials and methods.** This is an observational cross-sectional study derived from the ongoing international, prospective multicentric study “The COVID-19 Health care workers Study” (HEROES). A convenience sample of 2 127 HCW was obtained from Chiapas and Jalisco between May 19th and July 24th 2020. Depression was assessed using the Patient Health Questionnaire, resilience with the Brief Resilience Scale and a Covid risk scale was developed. Model-adjusted prevalence ratios (PRs) and an additive interaction model were performed. **Results.** Moderate-severe depression was found in 16.6% of HCW. Those from Jalisco, physicians, in hospitals, with chronic illness and mental health history were more depressed. The interaction between resilience and risk showed that, compared to those with no risk and medium/high resilience, HCW at risk with medium/high resilience had a 2.38 PR for depression while those at risk and low resilience had a PR of 5.83. **Conclusion.** This evidence points the need to develop strategies to enhance resilience and reduce the risk in HCW.

Keywords: mental health; depression; resilience; health personnel; coronavirus infections

Resumen

Objetivo. Reportar la prevalencia de depresión, resiliencia y factores de riesgo en trabajadores de la salud (TS) mexicanos durante la pandemia de Covid-19. **Material y métodos.** Estudio transversal que parte de otro prospectivo, multicéntrico e internacional, “The COVID-19 Health care workers Study”. Se reclutó una muestra por conveniencia de 2 127 TS de dos estados, Chiapas y Jalisco, entre el 19 de mayo y el 24 de julio de 2020. La depresión se midió con el Cuestionario de Salud del Paciente, mientras que la resiliencia con la Escala Breve de Resiliencia y se elaboró una escala de riesgo. Se calcularon las razones de prevalencias ajustadas (RP) y un modelo de interacción aditivo. **Resultados.** Se encontró depresión moderada-severa en 16.6% de los TS. Aquellos médicos de Jalisco en hospitales con enfermedades crónicas y de salud mental estaban más deprimidos. Comparados con los TS sin riesgo y resiliencia media/alta, aquellos en riesgo con resiliencia media/alta tenían una RP para depresión de 2.38, mientras que los que tenían riesgo y resiliencia baja tuvieron una RP de 5.83. **Conclusiones.** Se requiere desarrollar estrategias para mejorar la resiliencia y reducir el riesgo en los TS.

Palabras clave: salud mental; depresión; resiliencia psicológica; personal de salud; infecciones por coronavirus

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The world has been marked by the global Covid-19 pandemic, which has had an impact in everyone's lives in many ways, including, the use of facemasks,¹ social distancing,² isolation and quarantine,³ and telework.⁴ Studies show that these changes have influenced mental health in general,⁵ but also in specific populations such as healthcare workers (HCW). They have been thoroughly exposed to different risk factors, such as the provision of care for people infected with the SARS-CoV-2 virus and modifications in the structure and functionality of health services,⁶ all of these implying an increase in both biological and psychological workload.⁷

Studies from China⁸⁻¹⁰ reported an increase of distress, anxiety, depression, and insomnia in HCW due to the pandemic. A study with 20 947 HCW found that 61% presented fear of exposure or transmission, 49% burnout, 43% work overload and 38% self-reported anxiety and depression.¹¹ A study from Mexico¹² with 5 938 HCW reported that 52.1% presented insomnia, 37.7% had depression and 37.5% experienced post-traumatic stress disorder (PTSD). In this population, the main risk factor for depression (OR 2.2) was grief of friends and family members due to Covid. A qualitative systematic review¹³ showed that inadequate preparedness, emotional challenges, insufficient equipment, information, and work burnout were the four main topics regarding the burden of HCW during Covid-19. Similar results regarding mental health in HCW during the pandemic are found in other countries like Germany,¹⁴ particularly among healthcare workers (HCWs France,¹⁵ Spain,^{16,17} Brazil,¹⁸ Colombia¹⁹ and Ecuador).²⁰

Though there is a broad knowledge regarding the risk factors associated to depression in HCW during the current pandemic, fewer studies reported on mental health protective factors, such as resilience. There are several definitions of resilience, one of which is the ability to bounce back or recover from stress.²¹ For example, a study²² found that a higher level of resilience was protective factor against suicidal ideation among people with depression and anxiety. A study from Turkey with 214 HCW during the pandemic, using the Brief Resilience Scale (BRS), found that good quality of sleep, positive emotional state, older age and life satisfaction had an impact in improving resilience of HCW.²³ Also, resilience and optimism has been associated with a lesser probability of developing mental health problems in HCW during the Covid-19 pandemic, emphasizing the need to empower them.²⁴

To our knowledge, there are no studies that consider the role of Covid-19 related risk factors and resilience simultaneously with depression in HCW in developing countries. This is particularly relevant as Mexico, with

an estimate of 25% of SARS-CoV-2 infections²⁵ among the 126 million people,²⁶ has suffered largely from this pandemic. Thus, the aim of this study is to report the prevalence of depression, risk factors and resilience related to the initial phase of the Covid-19 pandemic among Mexican HCW from two states: Chiapas and Jalisco.

Materials and methods

Data collection

This is an observational cross-sectional study that is part of the ongoing international, prospective multicentric study "*The COVID-19 HEalth caRe wOrkErs Study*" (HEROES), in which more than 15 countries have collaborated.

An electronic survey (that took 15-20 minutes to answer) was developed by experts in mental health and psychometry from Columbia University and the University of Chile, which included validated instruments like the General Health Questionnaire (GHQ-12),²⁷ the Patient Health Questionnaire (PHQ-9),²⁸ the Columbia Suicide Severity Rating Scale (C-SSRS),²⁹ as well as a series of ad-hoc questions regarding workplace, family and social challenges related to the Covid-19 pandemic. The survey was revised by mental health professionals of the countries that participated.

A full description of the study method can be found elsewhere.³⁰ Briefly, inclusion criteria was being a HCW from Chiapas and Jalisco, working in a public or private health institution during the recruitment period, and fully completing the survey. Exclusion criteria was not completing the full survey. A convenience sample of HCW was achieved through the invitation of key health representatives, who expressed interest in joining the study, in health centers, clinics and hospitals of Chiapas and Jalisco, who directly and electronically encouraged all HCW from their units to voluntarily participate in the survey. The response rate could not be measured due to lack of updated national and state-level registries and databases regarding the number of HCW.

The study was approved by the ethics committee of the *Instituto Jalisciense de Salud Mental* (SALME, number 203-2020) and the Panamerican Health Organization (PAHO) for Mexico (No: PAHOERC.0208.02), based on the Declaration of Helsinki ethical principles. Informed consent was obtained through the acceptance checkbox at the beginning of the survey and was sent to their email address. Participants were assigned a personal and confidential ID. All data was hosted at the University of Chile using encryption technology that meets international standards.

Here, we report on the Mexican baseline data from the 2 127 HCW who completed the electronic survey: 1 485 from Chiapas and 642 from Jalisco. Data collection was carried out from May 19th to July 24th, 2020.

Measurements

Depression

Depression was the main outcome and was measured with the Spanish version of the Patient Health Questionnaire (PHQ-9). The scale has been validated in Mexican population, showing good psychometric properties with a Cronbach's alpha coefficient of 0.81.³¹ Participants indicated how often they experienced depressive symptoms in the last two weeks on a Likert scale from 0 = "not at all" to 3 = "nearly every day", with a range score from 0 to 27. Higher scores reflect symptom severity. Scores ≥ 5 are considered symptoms of mild depression, ≥ 10 moderate, ≥ 15 moderate to severe and ≥ 20 severe symptoms. A recent meta-analysis shows that the cut-off score of ≥ 10 maximizes sensitivity and specificity³² and thus used in this analysis.

Covid-19 risk scale

An *ad-hoc* Covid-19 risk scale, based on reports published previously,^{10,12,15-17,20} was developed with a total of 19 items and a dichotomized response (present/absent), with a sum range from 0 to 19 points. The cutoff score for high risk was determined at ≥ 8 positive items, corresponding to the third tertile of the distribution. Such scale considers aspects related to work, including change in roles, closeness to Covid-19 infected patients, PPE provision, personal Covid-19 test and positive result, provision of prioritization guidelines and decision, patient deceased from the infection and problems with relatives of patients; personal questions about worry of contagion to self and loved ones, loved one infected or deceased due to Covid-19, lack of trust in the workplace and the government and social related variables which included being stigmatized, discriminated or recipient of violence for being a HCW during the pandemic.

Resilience scale

The validated Spanish version³³ of the Brief Resilience Scale (BRS), with a Cronbach's alpha coefficient of 0.83, was used to measure resilience, to be assessed as a possible protective factor for depression. It is a self-applied six-item instrument to measure an individual's ability to recover from adversity. Three items are positive (1, 3 and 5) and three negative (2, 4 and 6)

measured on Likert scale with five response options from 1= "strongly disagree" to 5= "strongly agree". The sum was done after reversing the scores for the three negative items, therefore high scores indicate more resilience and low scores suggest less resilience. Since there is no cutoff point,^{21,34} the decision was made to use the division by tertiles. For descriptive purposes, the lower tertile was considered "low resilience", middle tertile as "medium resilience" and upper tertile as "high resilience".

Covariates

Sociodemographic data included sex, age, state of residence and highest level of studies. Work characteristics included profession, main place of work and type of healthcare center. Previous health considered the history of a chronic physical illness (cardiovascular, diabetes, cancer, non-Covid respiratory disease and immunologic disorders) and mental health history. For the latter, we combined two questions: previous diagnosis of a mental disorder and/or reporting the usage of any psychiatric medication, resulting in a dichotomized response (present/absent).

Statistical methods

The description of sociodemographic, work, and health variables was made with frequencies and percentages for the categorical variables and means and standard deviation for continuous variables.

The prevalence of depression was calculated in relation to categories of sociodemographic, work, previous health variables and resilience. Chi-square test was used for the comparison of proportions.

Model-adjusted prevalence ratios (PRs) were estimated based on Generalized Linear Models (GLM) with log link and binomial distribution.³⁵ Thus, PRs (prevalence rate in the exposed divided by prevalence rate in the unexposed) were computed for each item in the risk scale and depression in models adjusted for sex, age, state, profession, chronic illness and previous mental health, without the resilience variable. The same statistical procedure was done for resilience tertiles, without the risk variable. Another model was developed to estimate PRs for depression and both resilience and risk adjusted for each other, controlling for the covariates previously mentioned.

Finally, an additive interaction model³⁶ between risk and resilience was carried out with the following four combinations: 1) no risk + medium/high resilience (reference group), 2) no risk + low resilience, 3) risk + medium/high resilience, and 4) risk + low resilience.

All data analysis were performed on Stata 15.1. The level of statistical significance was evaluated with $p < 0.05$.

Results

Sample characteristics

The sample consisted of 68.4% woman and a mean age of 37.6 (SD 9.5). The participants had the following professions: 604 physicians (28.4%), 571 nurses (26.9%), 211 psychologists (9.9%), 192 administration staff (9%), 116 social workers (5.41%) and 433 (20.3%) of other occupa-

tions (paramedics, maintenance staff). Most participants (96%) worked in the public sector and in hospital settings (49.5%) (data not shown).

Depression

A total of 353 people (16.6%) referred the presence of moderate-severe depressive symptoms. Table I shows the prevalence of depression according to sociodemographic, work and previous health characteristics. HCW from Jalisco, medical staff, working in hospitals, and with chronic illness and a mental health history were significantly more depressed.

Table I
PREVALENCE OF DEPRESSION ACCORDING TO SOCIODEMOGRAPHIC, WORK, AND PREVIOUS HEALTH CHARACTERISTICS OF HEALTH WORKERS (HEROES STUDY) N = 2 127 CHIAPAS AND JALISCO, MEXICO, 2020

		Depression (PHQ-9 ≥ 10)	p-value
		Cases (prevalence, %)	
Total	-	353 (16.6)	-
Sex	Female	253 (17.4)	0.154
	Male	100 (14.9)	
State	Chiapas	217 (14.6)	<0.001
	Jalisco	136 (21.1)	
Highest level of studies	Basic studies (primary, secondary)	4 (14.3)	0.188
	Tecnical training	44 (13.9)	
	University studies	169 (15.9)	
	Postgraduate studies	136 (18.9)	
Profession	Medicine	145 (24.0)	<0.001
	Nursing	91 (15.9)	
	Psychology	19 (9.0)	
	Social work	15 (13.0)	
	Administrative	27 (14.0)	
	Others	56 (13.0)	
Main place of work*	Public sector	332 (16.3)	0.081
	Private sector	20 (23.5)	
Type of center	Health center	108 (13.1)	0.002
	Hospital	202 (19.2)	
Chronic physical illness	Administrative and other units	43 (17.3)	0.021
	No	268 (15.7)	
Mental health history	Yes	85 (20.4)	<0.001
	No	263 (13.6)	
	Yes	90 (45.9)	

* One missing value

Covid-19 risk scale

Table II summarizes the PRs of depression with the risk variables (crude and adjusted for sex, age, state, profession, chronic illness, and previous mental health). From the 19 risk items, the most prevalent was the concern about contagion of loved ones with 99.2%, followed by the concern about contagion of self (97.2%), lack of trust in the workplace (78.9%) and being in direct contact with Covid-19 (75.3%). The least reported item was having a positive Covid-19 test (2.8%).

For the adjusted models, it shows that there is a significant difference increase in the prevalence of depression in the exposed in comparison to the prevalence of depression in the unexposed for 11 of the 19 variables: 6

of the 11 work related variables, three of the six personal questions and the two social related variables. For the total high-risk score (≥ 8) we found a statistically significant adjusted PRs of 2.14 (95% CI=1.64,2.8), indicating more than double the prevalence of depression for those exposed to eight or more of the Covid-19 risk variables here studied. When the sum of the risk scale was used as a continuous variable, we found that for each point increase, the prevalence of depression augmented in 16% ($p < 0.001$).

Resilience scale

Depression was prevalent in 30% of HCW with low resilience, 13.3% with medium resilience and only 4.4% of

Table II
COVID-19 RELATED RISK FACTORS AND DEPRESSION (PHQ-9 CUTOFF SCORE ≥ 10). CRUDE AND ADJUSTED PREVALENCE RATIO. CHIAPAS AND JALISCO, MEXICO, 2020

Scale items (n; %)	PR	95% CI	aPR*	95%CI	p-value
Change in roles (960; 45.1%)	1.58	(1.3,1.92)	1.19	(0.95,1.48)	0.125
Closeness to Covid-19 patients (1 601; 75.3%)	1.85	(1.41,2.44)	1.49	(1.11,2.00)	0.008
PPE not provided by the institution (1 065; 50%)	1.17	(0.96,1.41)	0.84	(0.68,1.04)	0.106
Perception of insufficiency of PPE (1 651; 77.6%)	1.03	(0.82,1.30)	0.98	(0.77,1.23)	0.846
Covid test attempt (757; 35.6%)	1.84	(1.52,2.22)	1.46	(1.19,1.80)	<0.001
Positive result of Covid test (60; 2.8%)	1.42	(0.88,2.27)	0.78	(0.45,1.37)	0.395
Not received patient prioritization guidelines (1 044; 49%)	1.17	(0.97,1.42)	0.94	(0.77,1.15)	0.564
Prioritization decision (464; 21.8%)	1.32	(1.1,1.63)	1.4	(1.12,1.74)	0.003
Discomfort about the prioritization decision (230; 10.8%)	1.96	(1.56,2.46)	1.63	(1.26,2.11)	<0.001
Patient deceased from Covid (594; 27.9%)	1.77	(1.47,2.15)	1.43	(1.17,1.75)	<0.001
Problems with relatives of patients (428; 20.1%)	2.34	(1.94,2.83)	1.74	(1.40,2.16)	<0.001
Concern about contagion (2 067; 97.2%)	0.82	(0.49,1.38)	1.08	(0.56,2.08)	0.827
Concern about contagion of loved ones (2 109; 99.2%)	0.99	(0.35,2.81)	0.67	(0.37,1.21)	0.188
Loved one with Covid (826; 38.8%)	1.33	(1.1,1.61)	1.42	(1.14,1.78)	0.002
Loved one deceased from Covid (275; 12.9%)	1.3	(1.00,1.67)	1.3	(0.95,1.78)	0.105
Lack of trust in the workplace (1 679; 78.9%)	1.37	(1.11,1.70)	1.36	(1.10,1.68)	0.004
Lack of trust in the government (1 471; 69.2%)	1.73	(1.44,2.10)	1.32	(1.10,1.64)	0.014
Stigma or discrimination for being a healthcare worker (1 161; 54.6%)	2.32	(1.86,2.90)	1.73	(1.35,2.21)	<0.001
Recipient of violence for being a health worker (529; 24.9%)	2.1	(1.74,2.53)	1.64	(1.33,2.00)	<0.001
High risk total score (>8 points) (1 160; 54.5%)	2.79	(2.21,3.53)	2.14	(1.64,2.80)	<0.001
Sum of risk scale (continuous variable): med 7.97, SD 2.68	1.19	(1.16,1.22)	1.16	(1.12,1.20)	<0.001

* Model adjusted for sex, age, state, profession, chronic illness and previous mental health
PR: prevalence ratio; aPR: adjusted prevalence ratio

those with high resilience. The chi-square test showed a statistically significant association ($p < 0.001$) between resilience and depressive symptoms. Table III summarizes resilience and depression crude and adjusted PRs. For the adjusted model, it shows a significant lower PR of depression for those with medium and high resilience, compared to those with low resilience.

Resilience, risk and depression

Table IV shows the association of resilience and risk with depression. We can see that of those with high resilience there is an 80% lower prevalence of depression compared to those with low resilience, this percentage goes downwards to 47% in the case of medium resilience (also compared to low resilience). Also, those who had ≥ 8 positive items on the Covid-19 risk scale presented

Table III
RESILIENCE AND DEPRESSION (PHQ-9 CUTOFF SCORE ≥ 10). CRUDE AND ADJUSTED PREVALENCE RATIO. CHIAPAS AND JALISCO, MEXICO, 2020

Resilience categories (n; %)	PR	95%CI	aPR*	95%CI	p-value
Low (766; 36)	1	-	1	-	-
Medium (722; 34)	0.44	(0.36,0.55)	0.52	(0.41,0.65)	<0.001
High (637; 30)	0.15	(0.10,0.21)	0.19	(0.12,0.28)	<0.001

* Model adjusted for sex, age, state, profession, chronic illness and previous mental health
PR: prevalence ratio; aPR: adjusted prevalence ratio

Table IV
ASSOCIATION OF RESILIENCE AND RISK WITH DEPRESSION. ADJUSTED MODEL. CHIAPAS AND JALISCO, MÉXICO, 2020

Resilience categories	aPR*	95%CI	p-value
Low	1	-	-
Medium	0.53	(0.42,0.66)	<0.001
High	0.20	(0.12,0.30)	<0.001
High risk total score (>8 points)	1.99	(1.56,2.55)	<0.001

* Model adjusted for sex, age, state, profession, chronic illness and previous mental health.
aPR: adjusted prevalence ratio

double the prevalence of depression in comparison to those without the risk - adjusted for resilience, sex, age, state, profession, chronic illness, and previous mental health. This illustrated that both risk and resilience are independent factors, that is, when controlling one or the other, the effect persists.

Interaction model

The additive interaction model indicated that the combined effect of the two exposures (risk and resilience) was larger than the sum of the individual effects of the two exposures. Table V shows that in comparison to the reference group (no risk + medium/high resilience), those with no risk and low resilience had a three-fold significant prevalence ratio for depression. Regarding the people that referred being in risk, for those with medium/high resilience the PR for depression was 2.38. Most importantly, among the ones that expressed risk and low resilience the PR for depression was 5.83, suggesting the presence of an additive interaction, albeit small.

Conclusions

This cross-sectional study considered Covid-19 related risk factors and resilience with depression in HCW from two Mexican states during the first wave of the pandemic. The overall prevalence of moderate to severe depression was 16.6%. In comparison, a study from 2006 in Mexico with a total of 4 048 HCW reported depression in 12% of the study sample based on the CES-D (Center for Epidemiologic Studies) scale. Their results showed that factors associated to depression were being a woman, separated from spouse, with lower education, working in non-professional jobs with lower income, having a less satisfying job and the presence of chronic illness.³⁷

Table V
ADDITIVE INTERACTION MODEL. CHIAPAS AND JALISCO, MÉXICO, 2020

	aPR*	95%CI	p-value
No risk / Medium and high resilience	1	-	-
No risk / Low resilience	3.05	(1.97,4.72)	<0.001
Risk / Medium and high resilience	2.38	(1.56,3.64)	<0.001
Risk / Low resilience	5.83	(3.92,8.68)	<0.001

* Model adjusted for sex, age, state, profession, chronic illness and previous mental health.
aPR: adjusted prevalence ratio

We found that living in the state of Jalisco, medical staff, working in hospitals and with chronic illness and a mental health history were statistically significant more depressed. This could be explained by the fact that, during the recruitment period of this study, Jalisco had a higher workload with a total of 25 277 accumulated positive Covid cases and 1 361 deaths;³⁸ while Chiapas reported 5 588 positive cases and 859 deaths.³⁹ Medical staff, before and during the pandemic have reported long working hours (>40 hours per week or 8 hours per day), and this may have had an impact in depression, anxiety, sleep condition and coronary heart disease.⁴⁰ Evidence shows that junior doctors who worked >55 hours a week were more than twice as likely to report common mental disorders (OR 2.05) and suicidal ideation (OR 2.00) compared to those working 40–44 hours per week.⁴¹

Regarding Covid-19, we evaluated 19 related risk factors, of which the most prevalent risk was the concern about contagion of loved ones, followed by the concern about contagion of self. This correlates with findings of another study done in Mexico in which self-infection and being the source of infection for relatives were the main psychosocial stressors mentioned by HCW during the early phases of the pandemic.⁴²

We found more than double the prevalence for those exposed to eight or more of the nineteen Covid-19 risk variables studied. The three main risk factors found were having problems with relatives, being stigmatized or discriminated for being a HCW, and being a recipient of violence for being a HCW. Exposure to violence associated to emotional exhaustion, depression, and anxiety in HCW has been described before the pandemic.⁴³ Another study from Mexico¹² found that the main risk factor for depression was grief of friends and family members due to Covid (OR 2.2). However, this was not replicated in our study.

We had a particular interest of studying resilience and the prevalence of depression within HCW during the Covid-19 pandemic. The chi-square test showed that there is a statistically significant association ($p < 0.001$) between these two factors, confirmed by the following data: depression was prevalent in 30% of HCW with low resilience, 13.3% with medium resilience and only 4.4% of those with high resilience. Therefore, we found a significant lower PR of depression for those with medium and high resilience in comparison to those in the lower category ($p < 0.001$).

As previously mentioned, high resilience can be interpreted as a protective factor for the development of depression, even when controlling for the risk and covariates. This is also observed in other studies, where HCW with higher scores of resilience were less likely

to develop symptoms of depression than others⁴⁴ and were associated with lower Covid-19 worries.⁴⁵ Finally, the additive interaction model for depression showed that the combined effect of risk and low resilience was - although small - larger than the sum of the individual effects. Other protective factors for depression have been found in HCW during the pandemic, like gratitude, through a chain mediating effect of social support and hope.⁴⁶ These are additional factors that can be promoted through interventions to enhance work environment.

This research has several limitations, including the cross-sectional nature of the study, which restricts the understanding of the dynamic process that HCW have lived throughout the past two years of the pandemic. Thus, longitudinal studies are required to fully understand this phenomenon. Since there has not been routinely collected data about Mexican HCW mental health, we do not have national or state-level information about HCW depression prior to the pandemic, which makes it difficult to infer a causal explanation about resilience or certain risk factors on depression, related directly to the stress caused by the Covid-19 pandemic. Previous research regarding mental health in HCW in Mexico is scarce, thus it is not possible to propose a causal relationship of depression due to the pandemic. Another limitation of the study is the lack of validation of the ad-hoc questions used to evaluate Covid related variables. This was due to the haste of understanding mental health repercussions of HCW in the early phases of the pandemic.

Although the results of our research coincide with the literature, they should be taken with caution given that the selection of participants was based on a convenience sample of HCW. Additionally, the main respondents were physicians and nurses —and even though all the analysis were controlled by profession— we have no way of knowing if this factor could be a bias for the Covid-19 risk results.

This study found a 16.6% prevalence of moderate to severe depression in HCW during the early phases of the pandemic in Mexico. Risk factors related to Covid-19 increased the prevalence of depression in HCW, while resilience —even when risk was present— proved to be a protective factor. This evidence demonstrates the need to develop strategies to reduce risk (promote trust within the workplace and anti-stigma campaigns) and improve resilience (encourage well-being and workplace relationships) in this population. Further studies, especially longitudinal ones, are needed to determine if this relationship remains during next phases of the pandemic. Also, adding other possible protective factors like gratitude, social support and hope is a possible next step in this area.

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