The COVID-19
HEalth caRe wOrkErs Study (HEROES)
REGIONAL REPORT FROM THE AMERICAS

PAHO Pan American Health Organization World Health Organization Americas
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HEalth caRe wOrkErs Study (HEROES)

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The COVID-19 HEalth caRe wOrkErs Study (HEROES): Regional Report from the Americas

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Contents

Acknowledgements

Thanks are due to all the professionals who helped prepare this document, including the entire network of investigators of the COVID-19 HEalth caRe wOrkErs Study (HEROES) in the countries involved. We would especially like to thank Ezra Susser, Ruben Alvarado, and Franco Mascayano for their overall coordination, and Gonzalo Cuadra-Malinarich, Thamara Tapia-Muñoz, Alexandra Restrepo, Rodrigo Goycolea, Nilton Edu Montoya Gomez, and Sebastian Mejia for analyzing the data and drafting the document. Renato Oliveira e Souza, Carmen Martínez Viciana, Matías Irarrazabal, and Leticia Silvela, from PAHO's Mental Health and Substance Use Unit, participated in the conceptualization, follow-up, and review process.

Executive summary

Collaboration between the Pan American Health Organization (PAHO) and the *COVID-19 HEalth caRe wOrkErs Study* (HEROES) (*1*) team was established in 2020 to analyze the mental health status of health teams working during the COVID-19 pandemic in the Region of the Americas. This collaboration was formalized through an institutional agreement between the University of Chile, Columbia University, and PAHO.

This collaboration has led to various initiatives (such as webinars and seminars) in which the representatives of the study have reported preliminary findings, discussed the experience of developing this global health network driven by countries in the southern hemisphere, and suggested potential approaches to improve the mental health of health care workers, who have been so profoundly affected by the COVID-19 pandemic.

This report reviews the data collected in the baseline survey for the Region of the Americas. It covers 11 countries—Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Guatemala, Mexico, Peru, the Plurinational State of Bolivia, Puerto Rico, and Uruguay—and addresses these considerations:

- Description of the operation of the HEROES network and the HEROES study.
- Description of health care workers and their levels of psychological distress, depressive symptoms, and suicidal ideation.
- Presentation of examples from countries in the Region to help understand the role of context.
- Description of the relationships between psychological distress and depressive symptoms and the individual, occupational, and social factors of the health team.
- Suggestions for addressing the mental health of health care workers in the Region.

The findings highlight that most of the study's participants were women. In addition, between 14.7% and 22.0% of the health care workers presented symptoms suggesting a depressive episode, and the percentage of participants at risk of suffering a major depressive episode ranged from 3% in the Bolivarian Republic of Venezuela to 15% in Chile. At the same time, between 5% and 15% of health care workers reported suicidal ideation. In the countries of the Region represented in the study, less than one third of those who said they needed psychological care received it (between 11% and 25%) (*2*).

The most important risk factors included the need for emotional and economic support, concern about infecting family members, conflicts with family members of infected persons, and changes in usual job duties. The most important protective factors were trusting that the health care institution and the government could handle the pandemic, having children under 18, having the support of coworkers, and considering oneself a spiritual or religious person.

Some of the results-based recommendations include the need for specific government policies for the mental health of the population (particularly for health care workers) and the need to prioritize a gender approach to the management of occupational diseases. Support for health teams that perform the role

of caregiver is also an essential component of protecting health care workers. Psychological distress, symptoms of anxiety and depression, or any other mental health concern must be detected early, and support and intervention specific to health teams must be provided within and beyond the workplace. Because there is a group of health care workers with severe depressive symptoms and suicidal ideation, it is urgent that persistent gaps in access should be reduced, not only by making mental health services available to this group but also by acting on the barriers to effective access to this type of care.

Finally, the management of this pandemic, or any public health crisis, should be based on evidence and continuous expert guidance. Confidence in the organization in which one works, as well as in the government's ability to deal with a crisis, is essential to address the overburdening of health teams and protect their mental health.

Introduction

Less than a year after the World Health Organization (WHO) declared the coronavirus disease (COVID-19) pandemic, there was a clear need to **care for those who care for us** during a global health crisis (*3, 4*). By then, there was already evidence of this, related to previous infectious diseases (such as the SARS outbreak in 2002). This outbreak posed a serious threat to global public health, given the substantial impact it had on the mental health of health teams (*5*). In the first months of the COVID-19 pandemic, it became evident that health care workers were exhausted, especially in the regions of the world hardest hit by the rapid spread of infection and the severity of cases. In countries where health systems were clearly collapsing, health care workers faced strenuous workdays and ethical dilemmas, as illustrated by cross-sectional studies using national data (*6, 7*).

Another aspect that came to the forefront of the debate was the impact of the pandemic on health systems. The postponement of services due to the need to focus on pandemic control was referred to as "health debt" (*8*). The mental health of health teams has been considered part of this health debt, requiring timely interventions to protect the mental health of the population (*9*). Such interventions are urgently needed, especially considering that, according to the analysis of data from previous health emergencies, the risk of psychiatric symptoms and disorders may remain high in this population subgroup for more than two years after onset (*10*).

To better understand and act to protect health care workers' mental health, we must understand the different factors that influence mental health at multiple levels. Variables shown to constitute risk and protective factors can be identified at the individual level (*11*), as can contextual elements, such as the stigma and discrimination to which health care workers have been exposed, and which have been associated with a greater likelihood of experiencing depressive symptoms and having thoughts of death (*12*). We also found factors relating to the response of countries and their health systems to the health emergency, with particular emphasis on whether they developed measures specifically aimed at protecting the mental health of health care workers. In this connection, the social and organizational aspects of care work in the face of mental health problems are highly relevant (*13*).

A wide variety of factors affect the mental health of health care workers, and their repercussions are also manifold. Some initial data from cross-sectional studies carried out in the Region show that a high percentage of health care workers have mental health issues. For example, a cross-sectional study conducted in Chile in 2020 concluded that 65% of health care workers had depressive symptoms, 74% had symptoms of anxiety, and 65% had insomnia (*14*). Another cross-sectional study carried out in Mexico shows that 44.3% of health care workers experience insomnia, 31.2% have depressive symptoms, and 29.4% have symptoms consistent with post-traumatic stress disorder (PTSD) (*15, 16*).

The epidemiological situation has been changing in several countries of the Region, but it is likely that, among the repercussions of the pandemic, the mental health of health teams will continue to be one of the most relevant health challenges during 2022. Based on the findings of the HEROES study, a

prospective international study involving 26 countries from different regions of the world, this report provides an overview of the mental health of health care workers in the Region of the Americas, including findings for Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Guatemala, Mexico, Peru, the Plurinational State of Bolivia, Puerto Rico, and Uruguay.[1]

Several aspects of the HEROES study stand out. First, it includes a wide diversity of countries, both globally and in the Region, with different income levels, from different subregions where different languages are spoken, and with diverse health systems, among other contextual features. Another distinctive aspect of the project is that it includes the study of all types of health care workers who perform different roles in health systems. For example, it includes professionals from primary health care, emergency services, hospitals, and management and support departments, as well as from other health system institutions. It also covers technical and administrative staff, and personnel from different professions and specialties. Finally, it addresses different dimensions of risk factors and the experiences of health care workers during the pandemic, from workplace issues to community experiences, to the role that governments can play in managing the pandemic and formulating specific mental health policies.

This report describes the mental health situation of health care workers in the Americas based on the initial measurement of the results of the HEROES study, which serves as a baseline for evaluating its evolution, and it discusses the practices and policies that should be followed to face the health challenge this entails. The first sections of the document describes governance of the study, participating countries and institutions, and the methodology followed. Next, general findings are presented for the Region, as well as an exploration of specific risk factors. There is in-depth consideration of certain countries whose specific contexts help explain the variables in play during this health crisis. Finally, this report discusses the initiatives arising from HEROES aimed at designing interventions to protect mental health, and it concludes with recommendations based on the findings and initiatives developed by the project.

1 Since the beginning of the study, the global team and some countries in the Region have reflected on the relevance of the acronym. Using the concept of "heroism" could reinforce a view of health care workers that assumes certain expectations of selfless dedication to their work and tremendous resilience, undermining the importance of their need for optimal working conditions and making it difficult to highlight their high exposure to mental health risks. Even so, the acronym has been maintained throughout the text since it is the official name of the study.

1. Study governance and leadership

The HEROES study is a multicenter prospective cohort study designed to assess the impact of the COVID-19 pandemic on the mental health of health care workers in 26 countries on four continents. HEROES uses a uniform study design and data analysis plan that––in collaboration with the Pan American Health Organization (PAHO) and supported by the World Health Organization (WHO)––covers a wide range of academic institutions in 18 low- and middle-income countries and eight high-income countries. The study is co-directed by two principal investigators (Ezra Susser, of Columbia University's Mailman School of Public Health, and Rubén Alvarado, of the School of Public Health, Faculty of Medicine, University of Chile). The Steering Committee comprises five people, the two principal investigators mentioned above and three young investigators: Franco Mascayano, Els van der Ven, and Maria Francesca Moro.

The study was originally devised by the Chilean team and was quickly joined by the Columbia University team with students from the doctoral program in epidemiology, which made it possible to build an extensive network of young collaborators, guided by the two principal investigators. A distinctive feature of this work is the leading role gradually assumed by the young collaborators who have supported the study, many of whom are from or live in low- and middle-income countries. The Steering Committee assumes responsibility for making and implementing decisions that are relevant to all sites. It also develops and implements general policies regarding fieldwork, data analysis, publications, and other research procedures, and oversees funding and dissemination in relation to all sites.

The overall management approach for the study is a consensus-based model of shared decision-making. The usual decisions on practical matters are made by consensus among the members of the Steering Committee. Policy decisions are discussed and resolved by Steering Committee members and other HEROES members as needed. If consensus cannot be reached, decisions are made by a majority vote of the members of the Steering Committee. In addition, there are working groups known as "nuclei," whose purpose is to address various methodological and administrative issues. For example, one nucleus focuses on proposing variables relevant to the whole study, such as symptoms (e.g., post-traumatic stress disorder), social aspects (e.g., social justice), workplace (personal protective equipment) and other variables, and including them in the HEROES questionnaire.

The team approach is based on principles of cooperative leadership and mutual learning, which has helped to create a collaborative and friendly relationship between investigators from the South (Africa, Latin America, and Asia) and the North (United States of America and Europe). For example, most of the research materials (web-based surveys, study protocols) have been designed, translated, and adapted almost simultaneously in all participating countries and in close collaboration between teams from low- and middle-income and high-income countries. Given the original composition of the network framing the study—mainly young investigators—horizontal relationships have been established among its members that would have been difficult to achieve in a more traditional multicenter research project. This unusual but valuable arrangement has helped to reinvent South-North collaborations and to transform the usual power structures and practices in global mental health. Importantly, expert supervision was available as needed, i.e., the strengths of this approach did not sacrifice the methodological rigor of the study.

2. Participating countries and institutions

The HEROES study was conducted in 26 countries on five continents. However, in PAHO's interest, this study focuses on 11 countries in the Region of the Americas. To develop this report in the Region, the University of Chile, Columbia University, and PAHO established a formal collaboration agreement. However, academics and investigators from dozens of institutions also participated in it (see details in Annex 1). The participating institutions are listed below by country.

- Argentina: University of Chubut and National University of Lanús
- Bolivarian Republic of Venezuela: Dr. Arnoldo Gabaldón Institute of Advanced Studies
- Brazil: Federal University of Rio Grande do Sul, University of São Paulo
- Chile: University of Chile, Central University of Chile, O'Higgins University, the Medical College of Chile, Catholic University of Chile, Reloncaví Health Service, the Municipal Corporation of Renca, and the Chilean Ministry of Health
- Colombia: University of Antioquia, Javeriana University, and Mailman School of Public Health at Columbia University
- Ecuador: Ministry of Public Health
- Guatemala: Harvard University, University of San Carlos, Tulane University, Guatemalan Psychology Association, Association of Nutritionists, Cardiovascular Surgery Unit, Guatemalan Social Security Institute, College of Physicians and Surgeons of Guatemala, College of Pharmacists and Chemists of Guatemala, College of Stomatology of Guatemala, and the National School of Nursing of Guatemala
- Mexico: Ramón de la Fuente Muñiz National Institute of Psychiatry, Jalisco Institute of Mental Health, University of Oxford, Chiapas Regional Advanced Specialty Center, Department of Mental Health and Addictions of the Ministry of Health of Sonora, Center for Health Sciences Research of the Ministry of National Defense, Department of Mental Health and Addictions of the State of Chiapas, and Occidente Institute of Technology and Higher Education
- Peru: Mental Health Department of the Ministry of Health
- Plurinational State of Bolivia: Salud Global Bolivia
- Puerto Rico: Ponce Health Sciences University
- Uruguay: University of the Republic

3. Methodology of the study

This report is based on the initial data gathered in the HEROES study to establish the baseline for a prospective cohort with healthcare workers in the participating countries. The study considers follow-up evaluations performed at approximately 6, 12, and 24 months from the beginning of the study or baseline. As of September 27, 2021, the collaborative network conducting the study has 26 countries, of which 21 have conducted at least one data collection. In the Region of the Americas, these are Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Guatemala, Mexico, Peru, the Plurinational State of Bolivia, Puerto Rico, and Uruguay.

PARTICIPANTS

Table 1 shows the 11 countries in the Region of the Americas that contributed data to this report. Of these countries, nine (Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Guatemala, Mexico, Peru, and the Plurinational State of Bolivia,) collected data in the first measurement carried out in the pilot study, while two (Puerto Rico and Uruguay) established their baseline using the questionnaire prepared for the second evaluation, which was harmonized for this report. The participants were health care workers aged 18 years and older, contacted through centers that had been preselected for the study. In the 11 countries that reported their findings, information was obtained from medical and nursing professionals, as well as from nursing technicians, other medical professionals, administrative and management personnel, auxiliary personnel, and other workers such as cleaning, food service, and transportation personnel. However, the high number of professions included, and the low proportion of non-professional staff made it impossible to provide an exact breakdown for this report. The number of participants varied among countries in the Region, with sample sizes ranging from 167 workers in the Plurinational State of Bolivia to 2,584 in Mexico. Nine countries made over 500 comments (Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Guatemala, Peru, Puerto Rico, and Uruguay).

RECRUITMENT

Study participants were recruited mainly in three stages. In the first stage, the countries identified health centers with a large number of health teams of various types, as well as national registries or other organizations that could provide contact information for workers (Table 1). In the second stage, health care workers from the selected centers were sent invitations by email, telephone messages, and invitations from their headquarters, among others). Finally, in Argentina, Chile, Mexico, and Puerto Rico, the invitation was extended to all health care workers in the country using digital platforms and social media. A snowball sampling strategy was also employed. The objective of the first two stages was to control the total number of participants contacted for some locations in the countries; in the third stage, efforts were made to expand the sample size and the participation of specific groups of workers. As seen in Table 1, countries collected information on different dates, reflecting the different stages of the COVID-19 pandemic.

VARIABLES AND SURVEY

To assess the mental health of the health team and its associated factors, study participants completed an online survey developed from standardized instruments for assessing mental health problems. The survey has been translated into several languages, including Spanish, English, Portuguese, Italian, and Macedonian, and is hosted on a platform managed by the Information Technology for Education Unit (UTIE) of the School of Public Health at the Faculty of Medicine of the University of Chile.

The online questionnaire is self-administered and the average time to complete it is 15-20 minutes. The comprehensive questionnaire contains the Primary Care PTSD Screen for DSM-5 (PC-PTSD-5) (*17*), the Brief Resilience Scale (BRS) (*18*), the General Health Questionnaire (GHQ-12) (*19*), the Patient Health Questionnaire (PHQ-9) (*20*), and the Columbia Suicide Severity Rating Scale (C-SSRS) (*21*), as well as a series of items on individual, occupational, family, and social aspects related to the COVID-19 pandemic.

Table 1. Recruitment process in the HEROES study by participating countries in Latin America

Form of contact	Country	Sample size	Recruitment strategy
Data records	**Uruguay**	2,576	Participants come from a national registry managed by the Ministry of Health.
	Venezuela (Bolivarian Republic of)	1,038	Participants come from three national registries managed by the Ministry of Health.
	Peru	998	Participants come from a registry managed by the Ministry of Health that contains information for professionals from Callao and Lima.
Health centers	**Argentina**	833	Participants were located through multiple resources, such as social media, text messaging, and snowball sampling. Participants are clinical and non-clinical staff in the regions of Buenos Aires, Corrientes, Chubut, Mendoza, and Río Negro.
	Bolivia (Plurinational State of)	167	Participants were located through 12 health centers.
	Brazil	1,864	Participants were located by contacting health centers in Pernambuco, Rio de Janeiro, Rio Grande do Sul, and Sao Paulo.
	Chile	1,934	Participants were contacted through 16 public and private health centers representing two levels of care in the health network (primary care and hospitals). The third stage of recruitment was through social media and snowball sampling.
	Colombia	767	Participants were recruited through 42 public and private health centers in Bogotá (n = 18), Medellín (n = 12) and Cali (n = 12).
	Puerto Rico	219	Participants were recruited through 12 federal health centers and others were contacted via social media.
Other Organizations	**Guatemala**	1,522	Participants were recruited via email from among health care workers associated with academic institutions, trade unions, and other associations throughout the country.
	Mexico	2,584	Workers were contacted through key people in health institutions, mainly in the states of Chiapas and Jalisco.

In this study, the following are used as variables of interest:

Psychological distress: the GHQ-12 is a self-administered scale for the detection of morbidity from minor psychiatric disorders. The questionnaire considers positive and negative items. For positives, the response scale considers 0 "Better than usual," 1 "Same as usual," 2 "Worse than usual," and 3 "Much worse than usual." In contrast, for negative items, the four options are 0 "Not at all," 1 "Less than usual," 2 "Same as usual," and 3 "More than usual."

Depressive Symptoms: the PHQ-9 is a nine-item self-administered version of the depression module of the Primary Care Evaluation of Mental Disorders (PRIME-MD), which is based on the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria for major depression. Participants should respond if they have had any symptoms during the previous two weeks. The response options are "not at all" (0), "less than a week" (1), "a week or more" (2) and "almost every day" (3).

Suicidal thoughts: participants answered yes or no to the question "During the last two weeks, have you thought about suicide?"

Risk and protective factors associated with the three main variables were also selected. Table 2 shows these factors categorized by level of analysis (individual, family, occupational, social). The association analyses presented in the findings section using heat maps were carried out at the same levels of analysis.

DATA ANALYSIS

Descriptive and association analyses were carried out between mental health protective and risk factors of the health teams and the main mental health variables, namely psychological distress, depression, and suicidal ideation. The findings are presented using: (1) figures to characterize the participants from the 11 countries studied; (2) geographic maps for the distribution of the main variables by country; and (3) heat maps for the relationship with risk and protective factors.

Table 2. Variables included in the report, by analysis category

Analysis category	Variables
Socioeconomic variables	• Age (under 35, between 35 and 50 years of age, over 50) • Sex (men, women) • Education level (completed or incomplete primary education, completed secondary education, technical-university education, undergraduate or postgraduate university education)
Individual risk factors	• Needed and received psychological support • Needed and received childcare assistance • Needed and received help caring for people with disabilities • Needed and received financial help • Religion/spirituality • Level of resilience
Family risk factors	• Household members (total number, if living with people under the age of 18, over 65, or dependent) • Family member infected with COVID-19 • Fear of infecting a family member
Occupational risk factors	• Training, triaging patients with severe COVID-19 • Working in an intensive care unit • Working with patients with COVID-19 • Having to triage patients • Having sufficient personal protective equipment • Having support from coworkers • Having confidence in the institution's handling of the pandemic
Social factors	• Confidence in government decisions to manage the pandemic • Having been stigmatized during the pandemic • Having problems with a family member of a COVID-19 patient

4. Findings

SOCIODEMOGRAPHIC PROFILE OF PARTICIPANTS BY COUNTRY

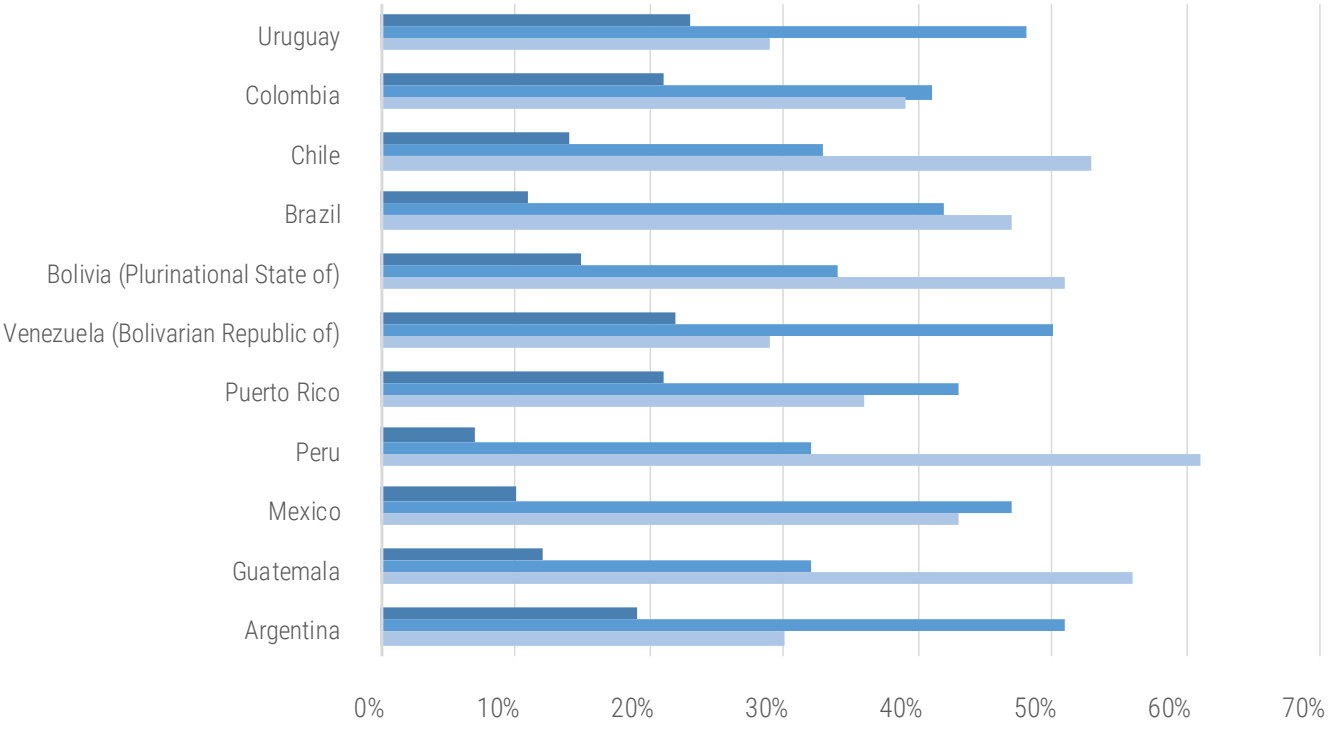
The health care workers in this report are from 11 countries in the network (Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile, Colombia, Guatemala, Mexico, Peru, the Plurinational State of Bolivia, Puerto Rico, and Uruguay). In all of them, it was mostly women who agreed to participate in the study. However, the percentages varied between countries, with 66% women in Guatemala and 84% women in the Bolivarian Republic of Venezuela.

Most of the participants were between 18 and 50 years of age. Most of the participants from Argentina, the Bolivarian Republic of Venezuela, and Uruguay were between 35 and 50 years of age, while in Colombia there was a roughly even split between health care workers under 35 and those between 35 and 50 years of age. Colombia, Puerto Rico, the Bolivarian Republic of Venezuela, and Uruguay were the countries with the highest number of participants over the age of 50 (Figure 1).

Regarding the education level of the health teams in the countries, most had undergraduate and postgraduate training. However, the study's objectives also included assessing the mental health of a percentage of non-professional health care workers whose mental health was affected during the pandemic. Uruguay, Argentina, and Brazil were the countries with the highest number of non-professional respondents among their participants, reaching 16% in Brazil and 18% in Argentina (Figure 2).

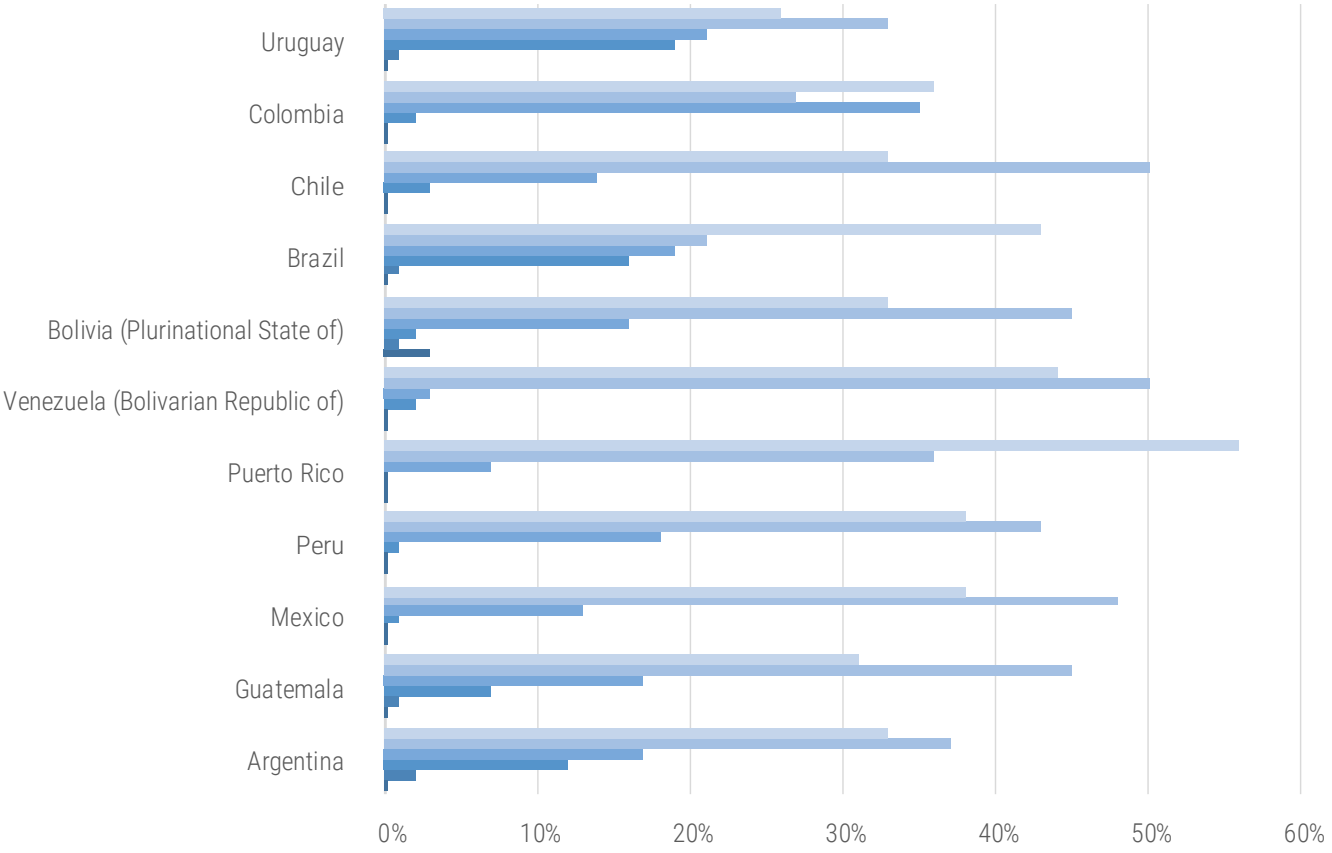
In most of the countries, respondents worked in public health centers (Figure 3). In the Plurinational State of Bolivia, this was true for 95% of the respondents. In Puerto Rico and Uruguay, a majority of respondents worked in private health centers. Only Colombia had participants who worked for health centers that were considered mixed.

Figure 1. Age distribution of health care workers surveyed in Latin American countries that participated in the study



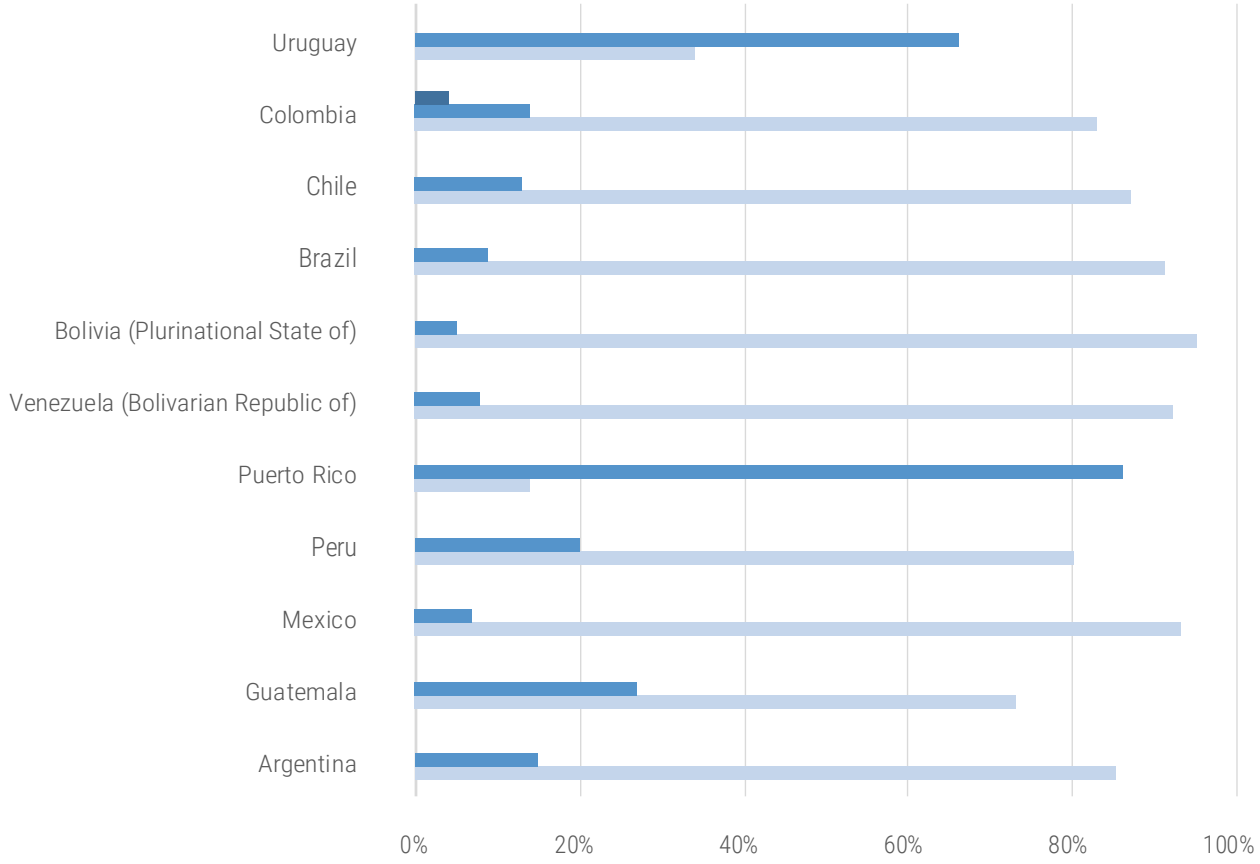
	Argentina	Guatemala	Mexico	Peru	Puerto Rico	Venezuela (Bolivarian Republic of)	Bolivia (Plurinational State of)	Brazil	Chile	Colombia	Uruguay
Over 50 years of age	19%	12%	10%	7%	21%	22%	15%	11%	14%	21%	23%
Ages 35–50	51%	32%	47%	32%	43%	50%	34%	42%	33%	41%	48%
Under 35 years	30%	56%	43%	61%	36%	29%	51%	47%	53%	39%	29%

Figure 2. Education level of health care workers surveyed in Latin American countries that participated in the study



	Argentina	Guatemala	Mexico	Peru	Puerto Rico	Venezuela (Bolivarian Republic of)	Bolivia (Plurinational State of)	Brasil	Chile	Colombia	Uruguay
Postgraduate studies	33%	31%	38%	38%	56%	44%	33%	43%	33%	36%	26%
Undergraduate studies	37%	45%	48%	43%	36%	50%	45%	21%	50%	27%	33%
Technical-vocational studies	17%	17%	13%	18%	7%	3%	16%	19%	14%	35%	21%
High school	12%	7%	1%	1%	0%	2%	2%	16%	3%	2%	19%
Elementary school	2%	1%	0%	0%	0%	0%	1%	1%	0%	0%	1%
Incomplete elementary school	0%	0%	0%	0%	0%	0%	3%	0%	0%	0%	0%

Figure 3. Workplace distribution of health care workers surveyed (public or private centers) in Latin American countries that participated in the study



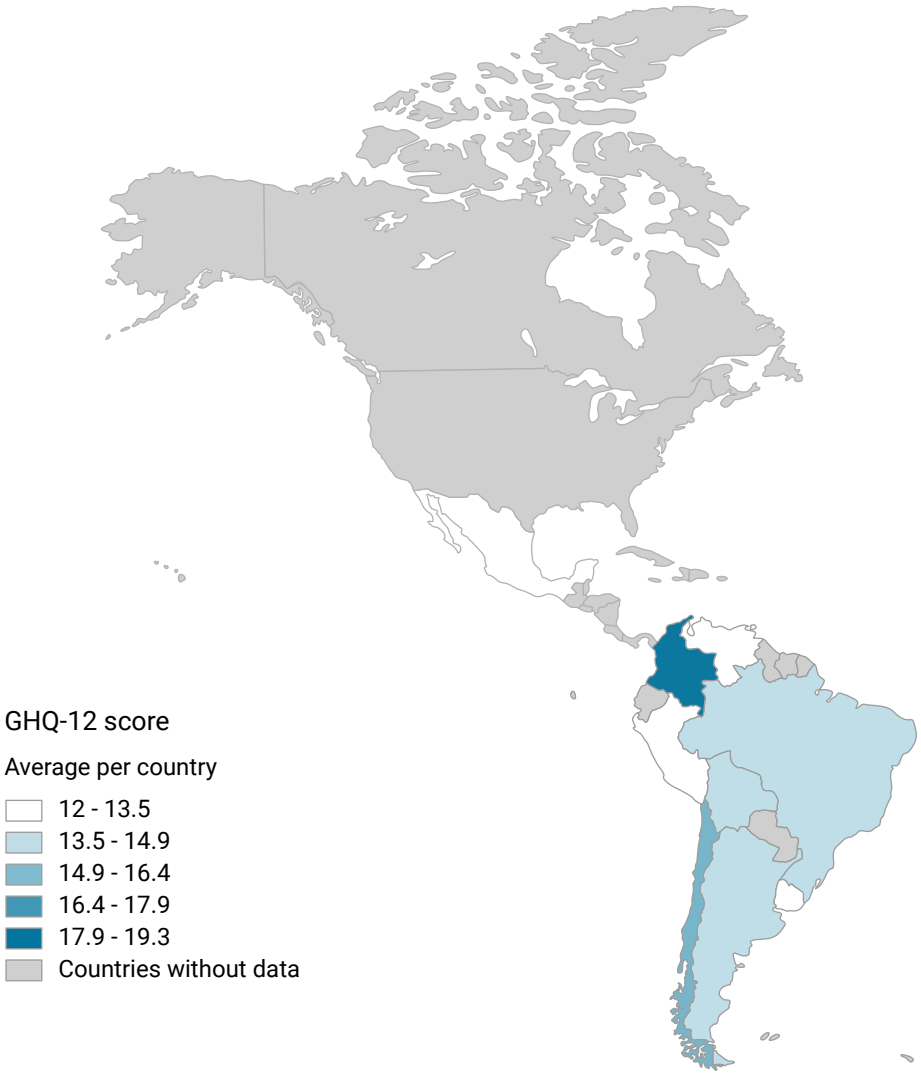
	Argentina	Guatemala	Mexico	Peru	Puerto Rico	Venezuela (Bolivarian Republic of)	Bolivia (Plurinational State of)	Brazil	Chile	Colombia	Uruguay
Mixed	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
Public	15%	27%	7%	20%	86%	8%	5%	9%	13%	14%	66%
Private	85%	73%	93%	80%	14%	92%	95%	91%	87%	83%	34%

MENTAL HEALTH OF HEALTH TEAMS

Psychological distress

As seen in Figure 4, within a range of 0 to 32 points, in which a higher score indicates a higher level of psychological distress, the average for the countries of the Region fluctuated between 13.5 and 16.6 in Argentina, Brazil, Chile, and the Plurinational State of Bolivia. Guatemala, Mexico, Peru, Puerto Rico, the Bolivarian Republic of Venezuela, and Uruguay presented, on average, lower psychological distress scores (between 12.0 and 13.5). Colombia was the country with the highest level of psychological distress, with an average of 19.34 points (SD = 0.27).

Figure 4. Ranges of average psychological distress reported by health care workers surveyed, Latin American countries that participated in the study

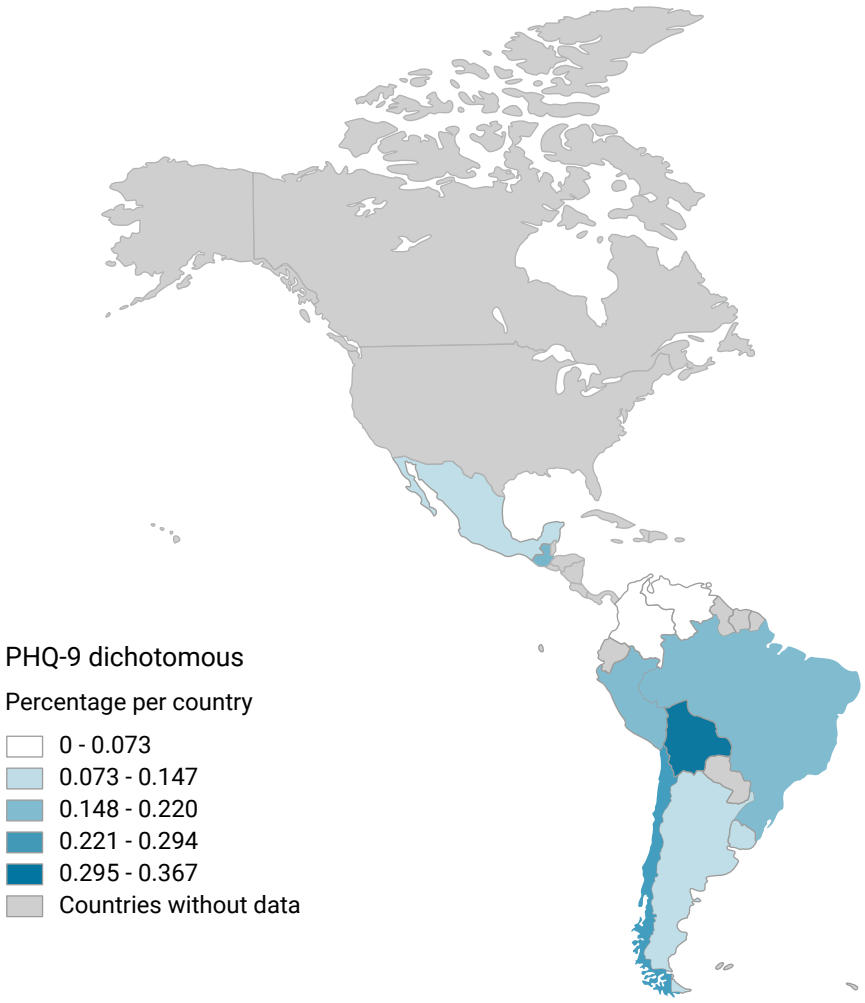


Depressive symptoms

Depressive symptoms, measured through the PHQ-9 scale, correspond to suspected depression with a total score equal to or greater than 10 points. In most of the 11 countries of the Region, between 14.7% and 22% of their health teams present symptoms leading to suspicion of a depressive episode. The Bolivarian Republic of Venezuela had the lowest percentage of health care workers with suspected depression (13.0%), while Chile was the country in which, according to the responses of the survey participants, a greater number of them presented depressive symptoms (36.7%) (Figure 5).

The percentage of health care workers with symptoms consistent with severe depression was also calculated. The countries with the highest rates were Chile (15.36%), Brazil (13%), Guatemala (10.23%), and Colombia (10.15%), while the Bolivarian Republic of Venezuela reported the lowest percentage of health care workers with potentially severe depression (3%). The percentages for the other countries ranged from 6.2% to 9.6% of respondents with suspected severe depression.

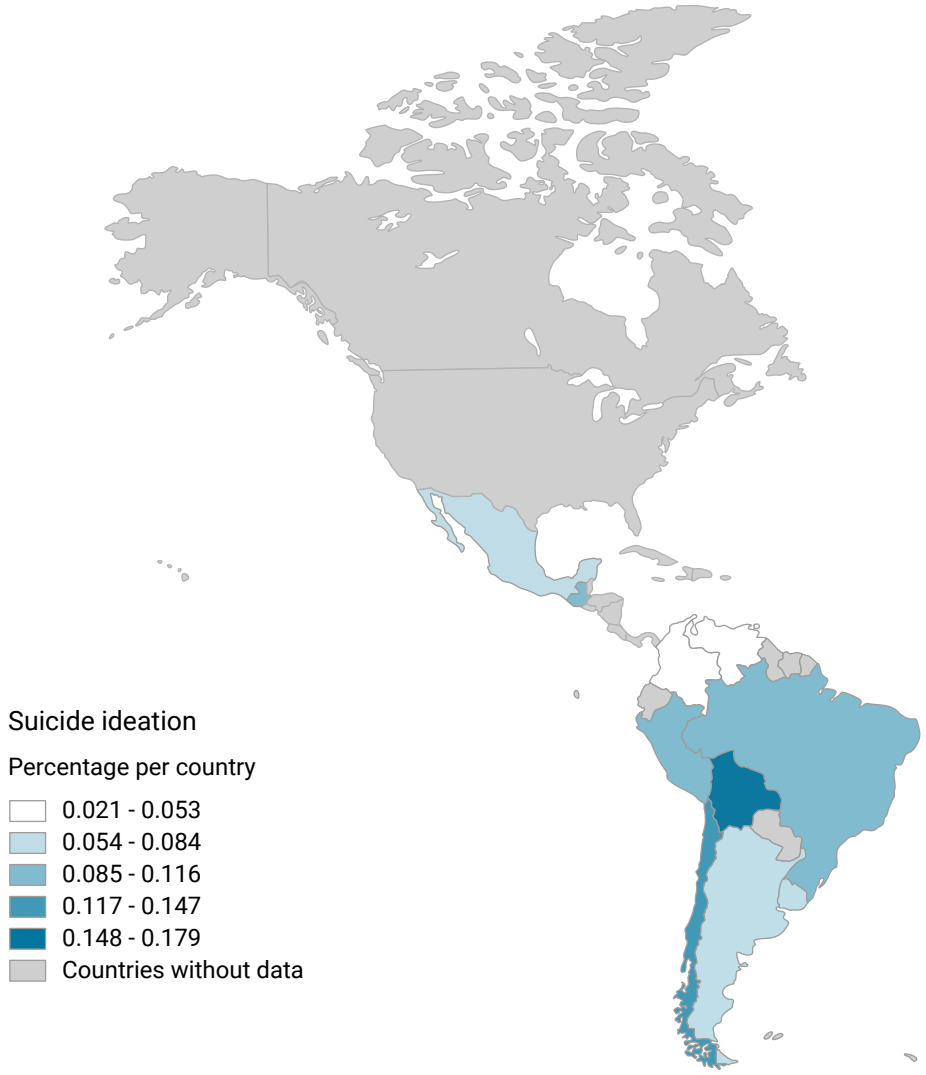
Figure 5. Percentage of cases with possible depressive episode among health care workers surveyed in Latin American countries that participated in the study



Suicidal ideation

Health teams in the 11 participating countries reported the presence of suicidal ideation in the last two weeks prior to the survey (Figure 6) at varying rates. Most reported between 5% and 15% of the health team with suicidal ideation. Notably, in Colombia and the Bolivarian Republic of Venezuela, between 2% and 5% of respondents did so, while Chile and the Plurinational State of Bolivia had the highest share of health care workers with suicidal ideation.

Figure 6. Proportion of health care workers surveyed who presented suicidal ideation in Latin American countries that participated in the study

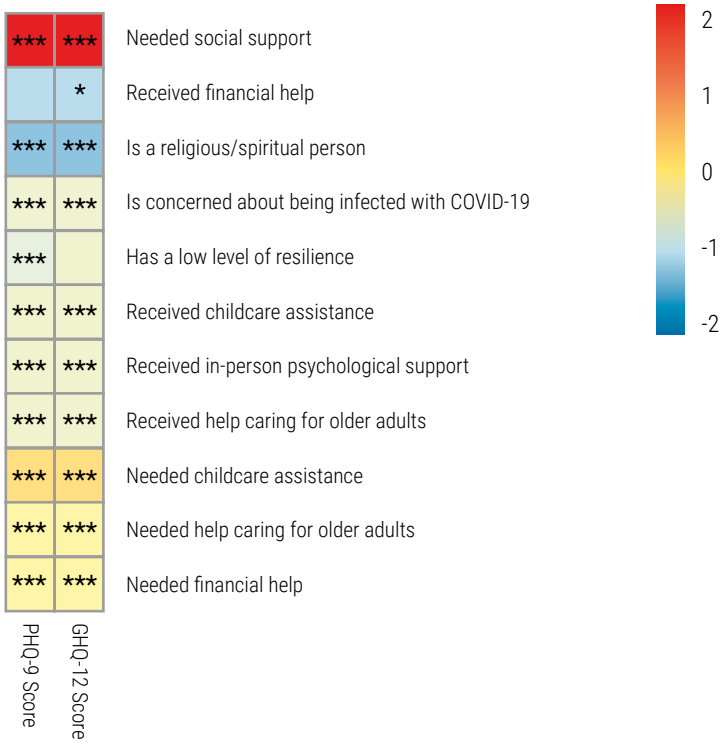


FACTORS ASSOCIATED WITH THE MENTAL HEALTH OF HEALTH TEAMS

Individual factors associated with psychological distress and depressive symptoms in health teams in Latin America

As seen in Figure 7, low social support increases the risk of health team members presenting psychological distress and depressive symptoms. Considering oneself a religious person reduced the risk of psychological distress and depressive symptoms among health care workers in the Region. Notably, receiving financial, psychological, and elder care support was associated with psychological distress and depressive symptoms. In the case of psychological support, between 11% (Bolivarian Republic of Venezuela) and 25% (Colombia) of respondents stated that their need for psychological support was met. In Chile, Alvarado et al. (*2*) reported that only one-third of health care providers who required psychological support obtained it.

Figure 7. Relationship between individual factors of health care workers and psychological distress and depressive symptoms



Note: The linear regressions used to generate the heat maps were adjusted for sex and age of the health care workers. Asterisks represent statistically significant relationships. * <0.05 **<0.01***<0.001.

Family factors associated with psychological distress and depressive symptoms in health teams in Latin America

Regarding family factors, as shown in Figure 8, concern about infecting loved ones was strongly related to psychological distress and depressive symptoms in health teams. The presence of children under 18 was associated with less psychological distress and fewer depressive symptoms. No relationship was found between the presence of disabled household members and psychological distress or depressive symptoms.

COVID-19-related occupational factors associated with psychological distress and depressive symptoms in health care workers in Latin America

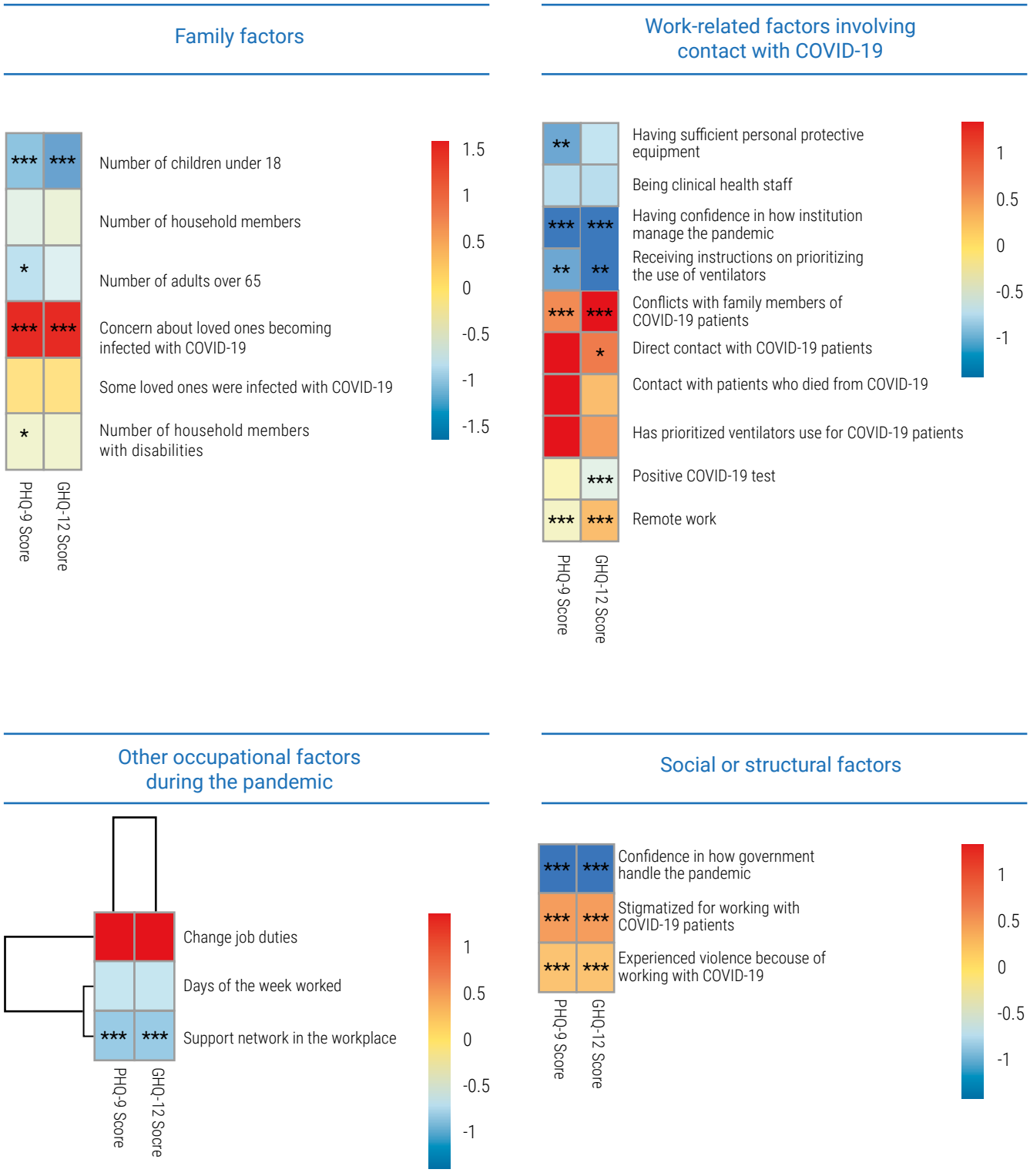
As Figure 8 shows, remote work was associated with psychological distress in healthcare teams. Direct contact with COVID-19 patients, having to triage patients, having coworkers who died from COVID-19, and facing conflicts with relatives of COVID-19 patients increased psychological distress and depressive symptoms in health care workers. Conflicts with relatives of COVID-19 patients was the factor most strongly related to psychological distress in health teams. Having sufficient personal protective equipment, being clinical health staff, having confidence in the institution's management of the pandemic, and receiving instructions on how to prioritize patients were workplace factors associated with COVID-19 that reduced psychological distress and depressive symptoms in health care workers in the Region.

Another relevant occupational factor was having had a change of duties during the pandemic, which was associated with an increase in psychological distress and depressive symptoms in health teams. Having a support network at work was a protective factor against psychological distress and depressive symptoms (Figure 8).

Social factors associated with psychological distress and depressive symptoms in health teams in Latin America

Confidence in the government's handling of the pandemic was associated with lower levels of psychological distress and depressive symptoms in health care workers. Stigma and violence from working with patients with COVID-19 was associated with a slight increase in psychological distress and depressive symptoms among health care workers in the Region (Figure 8).

Figure 8. Family, occupational, and social factors associated with psychological distress and depressive symptoms in health care workers in the Region of the Americas



Note: the linear regressions used to generate the heat maps were adjusted for the sex and age of the health care workers. Asterisks represent statistically significant relationships. * <0.05 **<0.01***<0.001.

THE ROLE OF CONTEXT: EXAMPLES FROM COUNTRIES IN THE STUDY

CHILE

Chile had some 1.6 million cumulative confirmed cases of COVID-19 and over 37,000 deaths as of October 1, 2021, with a cumulative incidence rate of 10,210 per 100,000 inhabitants (*22*); 73.7% of the population was fully vaccinated (*23*), which has helped create conditions for the relaxation of health measures and the recovery of socioeconomic activities at the national level.

Chilean society is going through significant political, economic, and social changes. The 'syndemic' effect––coined by Singer and recognized as a "social fact" with psychosocial and clinical mental health effects (*24*)––, has taken place in the midst of an institutional crisis in Chile's political model that started with the social upheaval of October 2019, affecting general living conditions (*25*). In this context, the national agenda is being shaped by the drafting of a new constitution and by the presidential and parliamentary elections at the end of the year.

The economic slowdown and job losses since 2020 have increased poverty, impacting the country's well-being. According to official government figures, income poverty reached 10.8% in 2020, up 2.2% from the last measurement in 2017. This increase in poverty was greater among the population belonging to Indigenous peoples (13.2%) and among people born in countries other than Chile (17%) (*26*). However, income poverty rises to 39.9% if only income from work and contributory pensions is considered, as these are the main sources of income for most Chilean households (*27*).

Labor participation rates declined for both men and women, with women seeing a decline to 2010 levels. Furthermore, household chores account for more than half of the time spent on unpaid activities and women contribute over 70% of the total time spent on household chores, with an upward trend in caregiving work (*28*). Thus, there is an apparent correlation between women's exit from the labor market and the intensification of the care they provide to children, the elderly, and others who require some form of assistance.

In the health sector, there are also significant asymmetries between men and women. Although health teams have faced a heavy workload across the board, women's participation in the health sector is higher (73.2%), in a regional context of wage discrimination. The labor income of women working in health care is 23.7% lower than that of men (*29*).

In this context, and given that Chile is among the countries with a high burden of morbidity due to psychiatric diseases (*30, 31*), the findings of this study indicate important differences between men and women. Women reported, among other experiences, feeling at greater risk of experiencing discrimination

or social stigma, as well as being less likely to have reliable networks at work, a greater presence of psychological distress, moderate to severe depressive symptomatology, and suicidal ideation (*2*). These work-related burdens put health care workers at greater risk of developing mental health problems.

Health institutions play a relevant role in terms of how they organize their resources and the working conditions they offer. One striking element in the Chilean case is that, in an analysis of the first wave of data collection (*2*), risk conditions were more frequently found among outpatient health care workers (most in primary health care) compared to those working in hospitals. This contrasts with part of the international literature, which shows that being among the frontline workers most exposed to severe cases of COVID-19 is associated with a higher prevalence of mental health symptoms, possibly suggesting a high PHC workload during the pandemic in Chile. In Chile, primary health care has been fundamental to crucial tasks such as vaccination, as well as testing, tracing, and isolation, in a Latin American context in which pandemic management has been largely hospital-based and the potential of PHC seems not to have been sufficiently promoted and exploited (*32*).

The initial exploration of the health teams' working conditions showed that, while more than 25% of professionals present moderate to severe depressive symptoms, this figure rises to 43% among non-professionals. And it showed that people who work over 44 hours have more depressive symptoms, especially women. These findings suggest the persistence of inequalities within the health system itself that require diligent assessment and action (*33*).

The Chilean experience of health teams and their mental health in a pandemic leads to the recognition of three important interdependent dimensions: gender, health institutions, and care. Considering that the pandemic has especially affected the mental health of health care workers (*34, 35*), the gender perspective is essential to any analysis and intervention in health care institutions. In a broader sense, the mental health of health teams and their families, and the role of health institutions as promoters of social welfare and health services, can be linked to the protection and valuation of multiple care models. In line with the recommendations of the United Nations, women-friendly policies should be a public good that can contribute to more just social and economic development for recovery during and after the pandemic (*36*). The social processes underway in Chile following the social protests of 2019, including the negotiation of a new constitution and parliamentary and presidential elections, present an opportunity to put these public policy perspectives on the table.

COLOMBIA

Colombia is a middle-income country and one of the largest economies in Latin America (*37*). However, according to the Gini coefficient (0.538), it is also one of the most unequal countries in the region.

The situation in Colombia is also unique. In 2016, a plebiscite was held in which citizens rejected a peace agreement with the Revolutionary Armed Forces of Colombia (FARC) guerrillas (*38*). Despite this outcome, an amended agreement was signed, and guerrilla violence and the number of violent deaths decreased significantly (38) as a result. However, guerrillas, paramilitary groups, and other unlawful armed groups continue to exist in several of the country's territories (*38*).

The first case of COVID-19 was reported on 6 March 2020 (*39*). Given the conditions of inequality and the percentage of the country's population living in poverty, the implementation of quarantines made it difficult to meet basic needs. Economic assistance programs such as *Colombia Mayor, Jóvenes en Acción, Familias en Acción*, the VAT refund, and the Solidarity Income Program were adopted. These programs reduced the drop in income in affected households during quarantine, and in individuals meeting the criteria (*40*) who were able to switch activities. Nevertheless, in 2020 the unemployment rate was 5.7% for men and 3.9% for women (*41*), and between 1.5 and 4.4 million people fell into monetary poverty because of COVID-19 (*42*).

Before the pandemic, Colombia was among the countries with the highest prevalence of anxiety worldwide (5.8% versus a world average of 3.6%) and the greatest percentage of disability time due to depression (9.4% versus a world average of 7.5%) (*43*). The sociopolitical situation and the economic consequences of the pandemic have created a difficult environment for health teams, with an increased risk of stress, anxiety, and other pathologies (*44, 45*). A key aspect of working conditions was related to the vaccination campaign. Health care workers who did not directly care for patients with COVID-19 or have contact with deceased persons gained access to the vaccine in the second stage of the campaign (*46*).

Preliminary analysis of data from the HEROES study in Colombia, obtained from 1,719 health care workers during the pandemic, shows a high risk of mental health problems. About 98% of health professionals experienced high levels of psychological distress, with 22.8% at moderate to severe risk of depressive problems, 16.1% at moderate to severe risk of anxiety problems, and 2.6% with suicidal ideation.

Given these preliminary data, the HEROES team from Colombia proposed a nationwide study to evaluate the impact that the pandemic had on the mental health of health care workers, with sampling that emphasized municipalities prioritized in the post-conflict period. The study also explored the potential interaction between pandemic stressors and the history of exposure to the violence of the armed

conflict, and how these stressors increase the risk of mental health problems in health teams. Besides measuring a 12-month cohort, the study included a qualitative component to assess the experiences of these professionals and how such experiences have changed their lives. In light of this evidence, there are plans to develop a telehealth-based intervention to prevent depression and anxiety, and to increase resilience in healthcare teams subjected to these stressors.

GUATEMALA

The first case of COVID-19 was confirmed in Guatemala on 13 March 2021. The first measurement of the HEROES study was carried out from July to September 2021 (*47*), and involved the participation of 1,522 people from both public and private health teams. The average age was 36.5 years, and most were women (66.8%). Psychological distress was very common (59%), followed by symptoms of moderate to severe depression (22.8%), which were more pronounced in younger health care workers who reported having direct contact with COVID-19 patients.

The findings of the HEROES Guatemala study showed that the mental health of health teams should be a priority, especially since the prevalence of diseases affecting mental health exceeds that of the general Guatemalan population or at-risk groups such as Guatemalan refugees (*48, 49*). To explain these findings, we must relate them to Guatemala's demographic, political, and socioeconomic context.

In terms of demographics, the Guatemalan population is mostly young, with a broad-based population pyramid that narrows sharply above the age of 35 (50). Most of the participants in the first survey were under 35. Some studies show that this age group is at higher risk for work-related mental health problems during the COVID-19 pandemic (*51*), which may partly explain these findings.

Regarding the political context, the COVID-19 pandemic coincided with the beginning of a new presidential term in Guatemala, the second most fragile Latin American state (52). The political environment has been characterized by the persistence of several unresolved problems since the signing of the 1996 Peace Accords, including violence affecting the population (53). Guatemala, which has a 2007-2015 Mental Health Policy but no law (*54*), is one of the countries in the region that allocates a small proportion of its health budget to mental health. It is also one of the countries that allocates a significant proportion of this budget to operating psychiatric hospitals (*31*), to the detriment of community strategies. The gap in mental health care is a public health problem and is one of the largest in the region; it is especially high among the Indigenous population (*55*). Access to mental health services for health care workers is also limited in this context.

Health teams hired to work in hospitals with COVID-19 care units have complained of payment delays or non-payment, and shortages of patient care supplies and of personal protective equipment. These conditions could have influenced the mental health findings in our study (*56*). Public spending on health

is among the lowest in the Americas (*57*), which limits the capacity to respond to the pandemic despite the increase in the number of hospital beds and the installation of five field hospitals (*52*).

Thus, Guatemala presented various difficulties in responding adequately to the COVID-19 pandemic. It is urgent to implement mental health programs that strengthen local institutional capacities because developing and strengthening plans, programs, and services aimed at promoting mental health would benefit health care workers and the entire population.

MEXICO

Mexico is a large country, with a territory of almost two million square kilometers divided into 33 states with over 126 million people (*58*). This vastness, as well as the density and diversity of the population, entails certain complexities when it comes to planning public health and mental health policies.

The country's health care system is divided between the Ministry of Health (federal and state coverage) and care associated with employment status, corresponding to the Mexican Social Security Institute, the Institute of Security and Social Services for State Workers, the military and naval system, and Petróleos Mexicanos, among others.

As for the care provided by the Ministry of Health, the budget allocated to mental health represents 2.2% of the total health budget (*59*). In 2021, two programs accounted for 89.7% of the mental health budget: Addiction prevention and care and Health care (*60, 61*). To date, there is no national mental health law; However, the General Health Act considers mental health services to be part of basic health services (*62*). There is a chapter on mental health (Chapter VII) which establishes that the prevention of mental illness and substance use is a priority, and focuses on the dissemination of information and the development of educational, sociocultural, and recreational activities. Regarding care for mental illness, only legal aspects such as the commitment of persons with mental disorders are mentioned.

With respect to the COVID-19 pandemic, according to data from the official website (*63*), 3,723,235 million cases and 282,026 deaths have been confirmed to date (10 October 2021). The main comorbidities are hypertension, obesity, diabetes, and tobacco-related disease.

The first survey of the HEROES study in Mexico was conducted between 19 May and 24 July 2021, with 2,585 healthcare professionals participating. Seventy percent were women with an average age of 37.5 years (SD: 9.4). A total of 85.5% of the sample had undergraduate and graduate education. The majority (93.3%) worked in the public sector; 53.1% worked in a hospital health center, 35.8% in a non-hospital health center, and the rest in administrative units (*64*).

Interestingly, since the beginning of the pandemic, 47.2% of health care workers reported having changed their designated activities or duties (*64*).

Regarding fears and concerns about the pandemic, 79.6% were very or extremely concerned about contracting COVID-19, but this figure increased to 94.8% for concern about infecting loved ones (*64*). Regarding personal protective equipment, 75.1% reported that it was insufficient for them to work safely. In addition, 54.2% of the sample reported discrimination for being health care workers and 24.4% reported having been subjected to some type of violence for this same reason (*64*).

In terms of mental health, according to the GHQ-12 scale, the most frequent symptoms were a reduced ability to enjoy normal activities (60.7%), followed by constant exhaustion (59.9%), loss of sleep (51.6%), decreased concentration (39.9%), and feeling unhappy or depressed (39.3%) (*64*).

For the assessment of depressive symptoms through the PHQ-9 scale, 46.6% reported depressive symptoms. Symptom severity was distributed as follows: 59.6% had symptoms in the mild depressive range, 24.0% had moderate symptoms, 10.6% had symptoms in the moderate to severe depressive range, and 5.7% had severe symptoms. The presence of suicidal ideas or thoughts was 6.2% (*64*).

Regarding substance use, 8.1% mentioned having taken antidepressants or anti-anxiety medications in the previous two weeks. However, there was a downward trend in the use of various substances (alcohol, tobacco, cannabis, cocaine), except for sedatives or sleeping pills, which increased slightly (3.9%) (*64*).

Among the health care workers surveyed, 24.2% reported needing some type of psychological support, but only 8.5% received it (*64*).

In conclusion, the presence of psychological distress and depressive symptoms was observed in a significant percentage of the health care workers surveyed. This phenomenon is intimately linked to the negative impacts on the social, occupational, interpersonal, and intrapersonal spheres of the population studied here.

Conclusions, recommendations, and next steps

CONCLUSIONS

This report brings together the evidence generated in the countries of the Americas that participated in the HEROES study, an international collaborative project with multiple waves of data collection, led by teams from the Region. The study focuses on the mental health of health care workers in the context of the COVID-19 pandemic and how it is affected by several factors at different levels that may be associated: individual, family, occupational, and social.

In methodological terms, the longitudinal nature of this study, with at least two waves of data collection in most of the participating countries, is valuable. It is also a global study, and the teams from the countries of the Region of the Americas have played an important role in its coordination. Because it uses common assessment instruments and similar recruitment strategies, it has favorable elements for drawing comparisons between the different participating countries.

Based on the use of validated scales, the study findings show high rates of depressive symptoms, suicidal ideation, and psychological distress in several countries of the Region. As for depressive symptoms, between 14.7% and 22.0% of health care workers in most countries presented symptoms that led to suspicion of a depressive episode, with Chile accounting for the highest rate. The figures for suicidal ideation fluctuated between 5% and 15% of respondents, with the highest values in Chile and in the Plurinational State of Bolivia. Regarding psychological distress, two groups presented relatively low values (12%-13.5%), while higher figures were observed in five groups, in which Colombia was the country with the highest values. Notably, some countries show rates higher than those identified in studies on the general population and in pre-pandemic research that used the same measurement instruments (2).

Apparently relevant associated factors include, at the individual level, having low social support and receiving economic support. At the family level, there was concern about infecting relatives. For those working with patients with COVID-19, factors included conflict with patients' families, having to triage patients, and confidence in the health care institution's management of the pandemic. In terms of working conditions, factors included changes in job duties and the presence of support networks at work. Finally, at the social level, factors included confidence in the government's handling of the pandemic and stigma, or having experienced violence related to working with COVID-19 patients.

A distinctive aspect of the HEROES study is that it is practice-oriented. The spirit of the project is not only to generate quality scientific evidence on the mental health of health care workers, but also to help develop interventions (both individual and institutional) and policies to address the negative consequences that the COVID-19 pandemic has had on mental health. To this end, the Ibero-American Network of Health Studies and Public Policies (RESPI) was formed by members of HEROES and other

professionals in different countries (including Argentina, Brazil, Chile, Costa Rica, Ecuador, Guatemala, and Mexico). This network has undertaken work in three stages. The first stage was aimed at learning about the initial governmental measures implemented by each country in response to the COVID-19 pandemic. The second phase analyzed the specific mental health responses and actions developed by Latin American governments in response to the pandemic. And the third phase, which is underway, is based on mixed methods and will provide an understanding of the relationship between the implementation of government pandemic response measures and the mental health of health care workers from those workers' perspective. Based on the first two phases, the RESPI team identified no specific mental health policies developed by Latin American governments in the participating countries. The survey results show that this is an urgent measure, and government policies should be developed to organize actions to protect the mental health of these workers, as well as to detect problems in a timely manner and provide access to mental health services. A significant gap remains to be filled; for example, according to the data from this study, only about a third of those who said they needed psychological care received it in some countries of the Region (*2*).

Another initiative associated with the HEROES study is the International Network of Mental Health Care Practices and Experiences (RIPEC-SM), currently comprised of representatives of universities, social organizations, State institutions, and trade unions, among others, from Argentina, Brazil, Chile, Colombia, Costa Rica, Peru, the Plurinational State of Bolivia, Nicaragua, and Uruguay. This working group is shaping a common idea related to the need to highlight and share practices, experiences, and resources for mental health care. Its website (https://practicasyexperienciasdecuidadosm.udc.edu.ar) offers access to 14 talks and a repository of 33 experiences of best practices for mental health care among the general population and health care workers.

Protecting the mental health of health teams should be an important component of countries' strategies for dealing with the post-pandemic period, in which health care providers will continue to play a key role in addressing delayed care and physical and psychosocial rehabilitation needs. The following section breaks down recommendations for the countries of the Region, based on the findings of the HEROES baseline study and its associated initiatives. These strategies should be implemented in conjunction with the recommendations of the IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings (*65*), which notes that it is vitally important for countries to establish a continuum of interventions from general pandemic management and governance to specific measures to protect the mental health of health care workers, including access to mental health care. The recommendations developed by PAHO in the document "Considerations and Recommendations for Protecting the Healthcare Teams' Mental Health" (*66*) should also be taken into account.

RECOMMENDATIONS

1. The approach to the mental health issues faced by health care workers during the pandemic should follow IASC guidance (62), in that it should establish a continuum of interventions based on essential services, followed by support for communities and families, and finally, specialty mental health services.
2. According to the study data, one element associated with better outcomes in mental health indicators is confidence in the government's handling of the pandemic. Therefore, the approach must be based on evidence and continuous dialogue with scientific organizations and health care workers' unions.
3. One of the guiding principles of the approach to mental health problems in health teams should be a gender equity perspective that considers the inequalities in this area and adapts policies and interventions to the considerations inherent to this perspective.
4. Regarding psychosocial support measures for health care workers, it is important to consider support needs for the care of children, the elderly, and people with disabilities.
5. Guaranteeing adequate working conditions is essential, as is personnel planning to prevent work overload and to ensure that task shifting is achieved through dialogue. Decent remuneration, stable contractual conditions, and social support in the workplace should also be provided.
6. In health network management, it is important that managers and directors at all levels of care receive training on the guidelines they must follow to protect the mental health of health care workers.
7. Health care institutions need to incorporate measures to support communication between health teams, patients, and families, and to develop psychoeducation and mental health promotion interventions for staff, including support in making difficult decisions.
8. In addition to ensuring that mental health services are available to health care workers, efforts should be made to address the barriers they may encounter in accessing specialized mental health interventions, including privacy concerns, by developing strategies to accommodate their specific needs. There is a gap between health care workers who require mental health care and those who actually access it, and specific measures must be taken to reduce this gap.
9. Measures for the protection of the mental health of health care workers, implemented at different levels of government, health systems, and individual institutions in the countries, should be kept in place beyond the peak periods of the pandemic, as its effects are likely to continue.
10. Governments should promote research on the mental health of health care workers, including the design and evaluation of effective interventions to protect it.

NEXT STEPS

The international HEROES study will continue to conduct waves of data collection and analysis of the mental health of healthcare teams and associated factors. Relevant data will continue to emerge for the monitoring of this public health problem. This is significant both for the approach to the pandemic and its impacts, and for the post-pandemic period. Health systems will be facing numerous challenges, including delayed care and the physical and psychosocial rehabilitation of a population affected by the pandemic. **Caring for those who care for us** will continue to be critical for years to come.

In addition, the projects that have emerged within the framework of this study will continue to foster the development of public policy research, health system practices, and other relevant experiences that will enable effective and comprehensive action to promote the mental health of health care workers.

Key messages

1. The COVID-19 pandemic has caused many deaths and has seriously overburdened health care systems. All this has affected the mental health of health care workers.

2. The findings of the international HEROES study show high rates of psychological distress, depressive symptoms, and suicidal ideation that—in some countries with comparable previous measurements—are higher than those of the general population and higher than pre-pandemic levels.

3. Addressing protective and risk factors at the social, institutional, occupational, and individual levels (while considering each country's specific context) can help to address mental health problems in health care workers.

4. There are significant gaps in the availability of and access to mental health care for health care workers. Efforts should be made to bridge these gaps by tailoring interventions and services to the specific needs of health care workers, including concerns about the confidentiality of interventions.

5. The impacts of the COVID-19 pandemic on the mental health of health care workers are likely to continue. It is therefore critical to monitor trends and take measures to address both risk factors and impacts.

6. Protecting the mental health of health care workers is a necessary component of the strategies that countries must develop to successfully address the impacts of the pandemic and post-pandemic period, such as catching up on delayed care and providing physical and psychosocial rehabilitation.

References

1. Mascayano F. vdVE, Moro MF, Schilling S, Alarcón S, Barathie JS, Alnasser L. et al. The impact of the COVID-19 pandemic on the mental health of workers in health services: study protocol for the COVID-19 HEalth caRe wOrkErS (HEROES) study. Social Psychiatry and Psychiatric Epidemiology. in press.
2. Alvarado R, Ramírez J, Lanio I, Cortés M, Aguirre A, Bedregal P, et al. El impacto de la pandemia de COVID-19 en la salud mental de los trabajadores de la salud en Chile: datos iniciales de The Health Care Workers Study. Rev Med Chile [Internet]. 2021; 149:[1205-14].
3. Caring for people who care: supporting health workers during the COVID 19 pandemic. Editorial. EClinicalMedicine [Internet]. 2020; 28. Available from: https://doi.org/10.1016/j.eclinm.2020.100667.
4. Wu AW, Buckle P, Haut ER, Bellandi T, Koizumi S, Mair A, et al. Supporting the Emotional Well-being of Health Care Workers During the COVID-19 Pandemic. J Patient Saf Risk Manag. 2020;25(3):93-6.
5. Maunder RG, Lancee WJ, Balderson KE, Bennett JP, Borgundvaag B, Evans S, et al. Long-term psychological and occupational effects of providing hospital healthcare during SARS outbreak. Emerg Infect Dis. 2006;12(12):1924-32.
6. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. JAMA Netw Open. 2020;3(3):e203976.
7. Rossi R, Socci V, Pacitti F, Di Lorenzo G, Di Marco A, Siracusano A, et al. Mental Health Outcomes Among Frontline and Second-Line Health Care Workers During the Coronavirus Disease 2019 (COVID-19) Pandemic in Italy. JAMA Network Open. 2020;3(5):e2010185-e.
8. Mauro V, Lorenzo M, Paolo C, Sergio H. Treat all COVID 19-positive patients, but do not forget those negative with chronic diseases. Intern Emerg Med. 2020;15(5):787-90.
9. Xiang YT, Yang Y, Li W, Zhang L, Zhang Q, Cheung T, et al. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. Lancet Psychiatry. 2020;7(3):228-9.
10. Galli F, Pozzi G, Ruggiero F, Mameli F, Cavicchioli M, Barbieri S, et al. A Systematic Review and Provisional Metanalysis on Psychopathologic Burden on Health Care Workers of Coronavirus Outbreaks. Front Psychiatry. 2020;11(1001).
11. Franck E, Haegdorens F, Goossens E, van Gils Y, Portzky M, Somville F, et al. The Role of Coping Behavior in Healthcare Workers' Distress and Somatization During the COVID-19 Pandemic. Front Psychol. 2021;12:684618.
12. Mediavilla R, Fernandez-Jimenez E, Andreo J, Moran-Sanchez I, Munoz-Sanjose A, Moreno-Kustner B, et al. Association between perceived discrimination and mental health outcomes among health workers during the initial COVID-19 outbreak. Rev Psiquiatr Salud Ment (Engl Ed). 2021.
13. De Brier N, Stroobants S, Vandekerckhove P, De Buck E. Factors affecting mental health of health care workers during coronavirus disease outbreaks (SARS, MERS & COVID-19): A rapid systematic review. PLOS ONE. 2020;15(12):e0244052.
14. Urzúa A, Samaniego A, Caqueo-Urízar A, Zapata Pizarro A, Irarrázaval Domínguez M. Salud mental en trabajadores de la salud durante la pandemia por COVID-19 en Chile. Rev Med Chile. 2020;148:1121-7.
15. Robles R, Palacios M, Rangel N, Real T, Becerra B, Fresán A, et al. A qualitative assessment of psycho-educational videos for frontline COVID-19 healthcare workers in Mexico. 2020. 2020;43(6):8.
16. Robles R, Rodríguez E, Vega-Ramírez H, Álvarez-Icaza D, Madrigal E, Durand S, et al. Mental health problems among healthcare workers involved with the COVID-19 outbreak. Braz J Psychiatry. 2020;43(5):494-503.
17. Prins A, Bovin MJ, Smolenski DJ, Marx BP, Kimerling R, Jenkins-Guarnieri MA, et al. The Primary Care PTSD Screen for DSM-5 (PC-PTSD-5): Development and Evaluation Within a Veteran Primary Care Sample. J Gen Intern Med. 2016;31(10):1206-11.
18. Smith BW, Dalen J, Wiggins K, Tooley E, Christopher P, Bernard J. The brief resilience scale: assessing the ability to bounce back. Int J Behav Med. 2008;15(3):194-200.

19. Goldberg DP, Williams P, University of London. A user's guide to the General Health Questionnaire. NFER-NELSON. 1988.

20. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med. 2001;16(9):606-13.

21. Posner K, Brown GK, Stanley B, Brent DA, Yershova KV, Oquendo MA, et al. The Columbia-Suicide Severity Rating Scale: initial validity and internal consistency findings from three multisite studies with adolescents and adults. Am J Psychiatry. 2011;168(12):1266-77.

22. Ministry of Health of Chile. Informe epidemiológico Nº153 Enfermedad por SARS-CoV-2 (COVID-19): Santiago: MINSAL; 2021.

23. Mathieu E, Ritchie H, Ortiz-Ospina E, Roser M, Hasell J, Appel C, et al. A global database of COVID-19 vaccinations. Nat Hum Behav. 2021;5(7):947-53.

24. Araya CM, Pisani AMO. Pandemia por COVID-19: un hecho social total. Sus efectos sobre la salud mental de los chilenos. Revista Chilena de Salud Pública. 2020:13-29.

25. Burrone MS, Reginatto G, Solís-Soto MT, Basagoitia A, Irarrázaval M, Rincón P, et al. Coronavirus e impacto psicosocial en Chile. Rev Med Chile. 2020;148:1224-6.

26. Chilean Ministry of Social Development. Encuesta de Caracterización Socioeconómica en Pandemia: MIDESO; 2020.

27. Durán G KM. La pobreza del "modelo" chileno: la insuficiencia de los ingresos del trabajo y las pensiones. Evidencia actualizada con datos CASEN en Pandemia 2020. Fundación SOL; 2021.

28. Central Bank of Chile. Impacto de la crisis del COVID-19 sobre la situación económica de las mujeres en Chile. Working paper, Senate Finance Committee. Central Bank of Chile; 2021.

29. Economic Commission for Latin America and the Caribbean. The economic autonomy of women in a sustainable recovery with equality: ECLAC; 2021. Available from: https://www.cepal.org/en/publications/46634-economic-autonomy-women-sustainable-recovery-equality.

30. Vicente B, Saldivia S, Pihán R. Prevalencias y brechas hoy: salud mental mañana. Acta bioethica. 2016;22:51-61.

31. Pan American Health Organization. The Burden of Mental Disorders in the Region of the Americas, 2018: PAHO; 2018.

32. Giovanella L, Vega R, Tejerina-Silva H, Acosta-Ramirez N, Parada-Lezcano M, Ríos G, et al. ¿Es la atención primaria de salud integral parte de la respuesta a la pandemia de Covid-19 en Latinoamérica? Trabalho, Educação e Saúde. 2020;19.

33. Nissan D, Weiss G, Siman-Tov M, Spitz A, Bodas M, Shenhar G, et al. Differences in levels of psychological distress, perceived safety, trust, and efficacy amongst hospital personnel during the COVID-19 pandemic. Res Nurs Health. 2021;44(5):776-86.

34. De Kock JH, Latham HA, Leslie SJ, Grindle M, Munoz S-A, Ellis L, et al. A rapid review of the impact of COVID-19 on the mental health of healthcare workers: implications for supporting psychological well-being. BMC Public Health. 2021;21(1):104.

35. Liu S, Yang L, Zhang C, Xu Y, Cai L, Ma S, et al. Gender differences in mental health problems of healthcare workers during the coronavirus disease 2019 outbreak. J Psychiatr Res. 2021;137:393-400.

36. United Nations Entity for Gender Equality and the Empowerment of Women. UN Women Strategic Plan 2018–2021; 2021. Available from: https://www.unwomen.org/en/digital-library/publications/2017/8/un-women-strategic-plan-2018-2021.

37. World Bank. Data: Colombia 2021: World Bank; 2021. Available from: https://data.worldbank.org/country/colombia.

38. Grasa R. Colombia cuatro años después de los acuerdos de paz: un análisis prospectivo. Documentos de trabajo N.o 39 (2.a época). Fundación Carolina. 2020(39):1.

39. Ministry of Health and Social Protection of Colombia. Confirmation of first COVID-19 case: Ministry of Health and Social Protection-Republic of Colombia; 2020 [in Spanish]. Available from: https://www.minsalud.gov.co/Paginas/Colombia-confirma-su-primer-caso-de-COVID-19.aspx.

40. Gallego J HB, Ibarrarán P, Medina MP, Pecha C, Romero O, et al. Impactos del programa Ingreso Solidario frente a la crisis del COVID-19 en Colombia: Inter-American Development Bank; 2021. Available from: https://publications.iadb.org/publications/spanish/document/Impactos-del-programa-Ingreso-Solidario-frente-a-la-crisis-del-COVID-19-en-Colombia.pdf.

41. Economic Commission for Latin America and the Caribbean. Social Panorama of Latin America 2020; 2021 [262]. Available from: https://www.cepal.org/en/publications/46688-social-panorama-latin-america-2020.

42. Cuesta J, Pico J. The Gendered Poverty Effects of the COVID-19 Pandemic in Colombia. Eur J Dev Res. 2020:1-34.

43. World Health Organization. Depression and other common mental disorders: global health estimates: Organización Mundial de la Salud [OMS]; 2017. Available from: https://apps.who.int/iris/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf.

44. Gómez-Restrepo C, Tamayo-Martínez N, Buitrago G, Guarnizo-Herreño CC, Garzón-Orjuela N, Eslava-Schmalbach J, et al. Violencia por conflicto armado y prevalencias de trastornos del afecto, ansiedad y problemas mentales en la población adulta colombiana. Revista Colombiana de Psiquiatría. 2016;45:147-53.

45. Ministry of Health and Social Protection of the Republic of Colombia. Salud mental, uno de los principales retos de la pandemia. Press release. No 237 of 2020: Ministry of Health and Social Protection of the Republic of Colombia; 2020. Available from: https://www.minsalud.gov.co/Paginas/Salud-mental-uno-de-los-principales-retos-de-la-pandemia.aspx.

46. Ministry of Health and Social Protection of the Republic of Colombia. Lineamientos técnicos y operativos para la vacunación contra el COVID-19: Ministry of Health and Social Protection of the Republic of Colombia; 2021. Available from: https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/VS/lineamientos-tecnicos-operativos-covid19-anexos.pdf.

47. Paniagua-Avila A, Ramirez-Flores, D., Barrera-Perez, A., Calgua-Guerra, E., Castro, C., Peralta-Garcia, A., Mascayano, F., Susser, E., Alvarado, R., Puac-Polanco, V. Mental health of Guatemalan health care workers during the COVID-19 pandemic: HEROES cohort study. American Journal of Public Health, in press.

48. Puac-Polanco VD, Lopez-Soto VA, Kohn R, Xie D, Richmond TS, Branas CC. Previous violent events and mental health outcomes in Guatemala. Am J Public Health. 2015;105(4):764-71.

49. Sabin M, Lopes Cardozo B, Nackerud L, Kaiser R, Varese L. Factors associated with poor mental health among Guatemalan refugees living in Mexico 20 years after civil conflict. Jama. 2003;290(5):635-42.

50. Pan American Health Organization. The Burden of Mental Disorders in the Region of the Americas: PAHO; 2018. Available from: https://www.paho.org/en/documents/burden-mental-disorders-region-americas-2018.

51. Galanis P, Vraka I, Fragkou D, Bilali A, Kaitelidou D. Nurses' burnout and associated risk factors during the COVID-19 pandemic: A systematic review and meta-analysis. J Adv Nurs. 2021;77(8):3286-302.

52. United Nations Guatemala. Common Country Analysis. Update 2021: Key figures: United Nations Guatemala; 2021 [in Spanish]. Available from: https://guatemala.un.org/sites/default/files/2021-07/CCA%20update%20summary%202021.pdf.

53. Caballero-Mariscal D. Ecos del enfrentamiento armado guatemalteco veinte años después del conflicto. El arraigo de la violencia. LiminaR: Estudios Sociales y Humanísticos. 2018;16:150-68.

54. World Health Organization. Mental Health ATLAS 2017. Member State Profile: Guatemala: OMS; 2017. Available from: https://www.who.int/mental_health/evidence/atlas/profiles-2017/GTM.pdf.

55. Kohn R, Ali AA, Puac-Polanco V, Figueroa C, López-Soto V, Morgan K, et al. Mental health in the Americas: an overview of the treatment gap. Rev Panam Salud Publica. 2018;42:e165.

56. Neau A. El personal de salud de Guatemala corre peligro por la COVID-19, pero también a causa de su gobierno. VICE. 4 July 2020. Available from: https://www.vice.com/es/article/5dzyy3/el-personal-de-salud-de-guatemala-corre-peligro-por-la-covid-19-pero-tambien-a-causa-de-su-gobierno.

57. Pan American Health Organization. Health Financing in the Americas: PAHO. Available from: https://www.paho.org/salud-en-las-americas-2017/uh-financing.html.

58. National Institute of Statistics and Geography of Mexico. Population and Housing Census 2020. Last update: 16 March 2021: INEGI; 2020 [in Spanish]. Available from: https://www.inegi.org.mx/programas/ccpv/2020/.

59. Ministry of Health of Mexico, World Health Organization Report of the assessment of the mental health system in Mexico using the World Health Organization Assessment Instrument for Mental Health Systems: Ministry of Health of Mexico, World Health Organization. [WHO-AIMS]; 2011 [in Spanish]. Available from: https://www.who.int/mental_health/who_aims_country_reports/who_aims_report_mexico_es.pdf.

60. Center for Economic and Budgetary Research. Mental health spending: Center for Economic and Budgetary Research [CIEP]. 2021 [Available from: https://ciep.mx/gasto-en-salud-mental/.

61. Budget for mental health: Relevance before Covid19: Center for Economic and Budgetary Research [CIEP]. 2021 [Available from: https://ciep.mx/presupuesto-para-salud-mental-relevancia-ante-la-covid19/.

62. Congress of the United Mexican States. Decree amending, adding, and repealing several provisions of Titles Three Bis and Eighteen of the General Health Act. Last amendment published (DOF: 04-06-2014). Congress of the United Mexican States; 2014 [in Spanish]. Available from: http://dof.gob.mx/nota_detalle.php?codigo=5347274&fecha=04/06/2014.

63. Government of Mexico. General Information COVID-19 Mexico: United Mexican States. Government of Mexico [in Spanish]. Available from: https://datos.covid-19.conacyt.mx.

64. Duran S, Carmona J. El impacto de la pandemia de COVID-19 en la salud mental de los trabajadores en los servicios de salud: Health care wOrkErS - COVID-19 Study. Informe 1 México. 2021.

65. Inter-Agency Standing Committee. IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings. Summary version. Geneva: IASC; 2007. Report No.: 1424334454.

66. Pan American Health Organization. Considerations and Recommendations for Protecting the Healthcare Teams' Mental Health: PAHO; 2021. Available from: https://iris.paho.org/handle/10665.2/54970.

Annex 1. Investigators and collaborators to the study *The COVID-19 HEalth caRe wOrkErs Study* (HEROES) in the Region of the Americas

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		Andrés Mecha	National team coordinator
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		María Verónica Vila	Collaborator
		Mónica Elba Borile	Collaborator
		Soledad Fabiana Peña	Collaborator
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		Cecilia Russo	Investigator
		María Belén Pastrian	Investigator
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		Sofía Loitegui	Investigator
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Country	Institution	Name	Role
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	University of São Paulo	Andrea Tenorio	Coinvestigator
		Dinarte Ballester	Coinvestigator
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		Gonzalo Soto	Investigator
		Rubén Alvarado	Global principal investigator of the study
		Sara Schiling	Investigator
		Sebastián Alarcón	Investigator and coordinator of the platform team that provides the technological support for the study (Information Technology for Education Unit of the School of Public Health)
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		Alex Benavides	Investigator
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Country	Institution	Name	Role
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The COVID-19 HEalth caRe wOrkErs Study (HEROES) is a multicenter prospective cohort study to assess the impact of the COVID-19 pandemic on the mental health of health care workers in 26 countries on four continents and how it is affected by several factors at different interrelated levels: individual, family, occupational, and social.

This brief report presents the evidence generated from the baseline survey of 11 participating countries in the Region of the Americas. Using validated scales, the findings show high rates of depressive symptoms, suicidal ideation, and psychological distress in several countries of the Region.

The spirit of the project is not only to generate quality scientific evidence on the mental health of health care workers, but also to help develop interventions (both individual and institutional) and policies to address the negative impacts of the COVID-19 pandemic on mental health.

PAHO Pan American Health Organization
World Health Organization
Regional Office for the Americas