

# OCCUPATIONAL EXPOSURE TO COVID-19 IN HEALTHCARE WORKERS FROM LATIN AMERICA, MAY 2020

## EXPOSICIÓN OCUPACIONAL AL COVID-19 EN TRABAJADORES DE SALUD DE LATINOAMÉRICA, MAYO 2020

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### ABSTRACT

**Introduction.** Coronavirus disease 2019 (COVID-19) is an acute respiratory infectious disease caused by the SARS-Cov-2 virus, which not only represents a great challenge, but is setting a precedent for the medical community. In this situation, it is suggested that all personnel who are exposed to occupational risks - specifically biological risk - will use the necessary personal and collective protection equipment provided by the institution or company for which they work. Workers in areas and jobs at high risk of infection can be stigmatized and discriminated, leading to their exclusion from the community and their increased exposure to violence and harassment. **Objective.** Analyze the occupational exposure to SARS-CoV-2 in health personnel in Latin America in May, 2020. **Methods and materials.** A quantitative, descriptive, cross-sectional study was carried out; a non-probabilistic sample of 713 volunteers participated. An online questionnaire of 30 closed questions was applied. Statistical analysis was performed using Excel 2019, using frequency analysis and central tendency measurements. The Helsinki bioethics recommendations were considered. **Results and discussion.** Health workers from 13 Spanish-speaking Latin American countries, from 7 professions in the health sector, participated. The personal and labor/institutional risk factors and repercussions on the personnel were detailed. **Conclusions.** Besides providing the necessary equipment and safety measures and protocols to the health workforce, it is fundamental that institutions adopt new collaborative policies that ensure the holistic protection (including psychological and emotional) of their workers.

### RESUMEN

**Introducción.** La enfermedad del coronavirus 2019 (COVID-19) es una enfermedad infecciosa respiratoria aguda causada por el virus SARS-Cov-2, que no solo representa un gran desafío, sino que está sentando un precedente para la comunidad médica. Se sugiere que todo el personal que esté expuesto a riesgos laborales, específicamente riesgo biológico, utilice los equipos de protección personal necesarios proporcionados por la institución o empresa para la que labora. Los trabajadores con alto riesgo de infección pueden ser estigmatizados y discriminados, lo que lleva a su exclusión de la comunidad y su mayor exposición a la violencia y el acoso. **Objetivo.** Analizar la exposición laboral al SARS-CoV-2 de los colaboradores de salud en Latinoamérica en mayo 2020. **Métodos y materiales.** Estudio cuantitativo, descriptivo, transversal; participó una muestra no probabilística de 713 voluntarios. Se aplicó un cuestionario en línea de 30 preguntas cerradas. El análisis de estadísticos se realizó mediante Excel 2019, utilizando análisis de frecuencia y mediciones de tendencia central. Se consideraron las recomendaciones de bioética de Helsinki. **Resultados y discusión.** Participaron trabajadores sanitarios de 13 países hispanohablantes de América Latina, de 7 profesiones del sector salud. Se detallaron los factores de riesgo personales, laborales-institucionales y sus repercusiones en el personal. **Conclusiones.** Además de proveer el equipo y medidas de bioseguridad necesarias, es fundamental que las instituciones adopten nuevas políticas conformadas en conjunto para que se asegure la protección integral (a su vez psicológica y emocional) de los trabajadores.

### INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an acute respiratory infectious disease caused by the SARS-Cov-2 virus, which not only poses a great challenge, but is setting a precedent for the medical community.<sup>1</sup> According to data published by the World Health Organization (WHO), the first cases of pneumonia of unknown etiology, 27 to

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be specific from which 7 were serious cases, appeared in December of 2019, with the common factor of exposure to a wholesale market for seafood, fish and live animals in Wuhan City, in China's Hubei province. Later on, the previously unknown coronavirus, being called "novel coronavirus" (nCoV), was isolated on the 7th of January, 2020, identifying it and renaming it to its current name, SARS-CoV-2.<sup>2</sup>

Depending on the serotype and genotype, coronaviruses are divided into four types, identified as  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ .<sup>3</sup> SARS-CoV-2 is the seventh coronavirus - recently emerged - belonging to the  $\beta$ -coronavirus subtype and causes infections in humans. The tropism and pathogenicity of coronaviruses determine their classification into a respective group:  $\alpha$  coronaviruses often cause mild upper respiratory tract infections;  $\beta$  viruses are highly pathogenic, can cause pneumonia and severe respiratory disorders such as Severe Acute Respiratory Syndrome (SARS) or Middle East Respiratory Syndrome (MERS).<sup>2</sup>

The virus is spread through respiratory droplets and through direct contact with an infected person. Cases of spread of the virus by air have not been confirmed and, although not considered significant, cannot be ignored when carrying out medical procedures related to the formation of aerosols.<sup>1</sup> Its incubation period lasts for 6.4 days on average (with a range of 2.1 to 11.1 days), however, taking into account the length of the incubation period, the authors of the report by Wujtewicz et al. suggest that in order to guarantee the reduction of the spread of the virus through quarantine, it is reasonable to assume the incubation time between 2.4 - 15.5 days. On the other hand, according to the WHO data, the time of onset of symptoms is between 1-14 days (generally 5 days).<sup>2</sup> Most people have a favorable prognosis; older patients and those with chronic underlying conditions are usually the most complicated and contribute to an increased risk of fatality. Patients with severe disease can develop dyspnea and hypoxemia within a week after the onset of the disease, which can rapidly progress to acute respiratory distress syndrome (ARDS) or end-organ failure. The most frequently found comorbidities are: high blood pressure, diabetes mellitus, liver diseases and chronic lung disease. 80% of the cases present mild symptoms, characterized by the following clinical symptoms: a) fever,

b) runny nose, c) non-productive cough, d) odynophagia, e) general malaise, f) diarrhea; or the disease may develop asymptotically.<sup>4-5</sup>

In this situation, it is suggested that all personnel who are exposed to occupational risks - specifically biological risk - will use the necessary personal and collective protection equipment provided by the institution or company for which they work, always prevailing in the following order: preventive controls: source, transmission medium and receiver (worker)<sup>5</sup>. In China, the reports state that health workers represent around 20% of all confirmed positive cases.<sup>4</sup>

Biological risk is not the only problem that health workers face in the current pandemic; workers in areas and jobs at high risk of infection can be stigmatized and discriminated, leading to their exclusion from the community and their increased exposure to violence and harassment.<sup>4</sup>

It is essential that governments view health workers not simply as chess pieces, but as humans, with families, with dreams and emotions, and in turn with labor rights. Within the global response, the safety of health workers must be guaranteed. Adequate provision of PPE is only the first step, but other practical measures should also be considered, including canceling non-essential events to prioritize resources, food provision, rest, and family and psychological support.<sup>6</sup>

In Latin America, the disease spread began late in relation to the European and Asian continents, and, therefore, there hasn't been any published study that indicates or collects data on occupational exposure in health personnel at the local (country) or regional level in this geographical area. Because of this, the aim of this study is to detail the risk factors of occupational exposure in healthcare workers in the region, adding as well the risk factors given by the institutions in which they work, and compare them with the WHO and the International Labour Organization (ILO) guidelines, so we can identify the obstacles to which health personnel are prone in the region.

## MATERIALS AND METHODS

This is a non-experimental study with a quantitative approach and descriptive scope, cross-sectional. The non-probabilistic sample

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of 713 volunteers from various Latin American countries participated. The inclusion criteria were: Spanish-speaking Latin American healthcare workers (Social Service or Residency Program Doctors; Medical Doctors; Specialists and Subspecialists Doctors; Medical Teachers, Social Service Nurses, Nursing Assistants, Microbiology Professionals, Radiology Technicians, Psychologists, Social Workers) of aged 18 or over, willing to participate in the study, who are in contact with a patient with COVID-19. The exclusion criteria were: unwillingness to participate in the study, healthcare workers from Brazil (because of the language barrier), under legal age workers. A self-applied online questionnaire (internet) was used, consisting of 30 closed questions, with a temporal stability coefficient of (0.84) through the application of a test and retest to 10% of the sample, representing 71 people using the Pearson R correlation. The statistical analysis was carried out using Excel 2019, measures of central tendency and frequency analysis. The recommendations of the Declaration of Helsinki were considered; explaining by electronic means the research objective, procedure and confidentiality of the data, voluntarily agreeing to participate in the study.

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## RESULTS

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We received a total of 718 responses from 13 Spanish-speaking countries from Latin America, where, through informed consent, 99,3% accepted to participate in the study and 0.7% didn't, although they filled in the questionnaire. Therefore, the real amount of participants is 713. Out of all the participants, 524 (73,5%) confirmed to have been in contact with suspected or confirmed COVID-19 cases and 189 (26,5%) stated they have not. The participant countries and their percentages of responses from each We received responses from 13 out of 20 Spanish-speaking Latin American countries, distributed as follows: Mexico: 174 (24,4%), Honduras: 169 (23,7%), Colombia: 62 (8,7%), Costa Rica: 59 (8,3%), Argentina: 52 (7,4%), Peru: 46 (6,5%), Guatemala: 37 (5,2%), Chile: 34 (4,8%), El Salvador: 20 (2,8%), Ecuador: 17 (2,4%), Bolivia: 17 (2,4%), Nicaragua: 15 (2,1%), Venezuela: 10 (1,4%). Regarding age, 706 participants (99%) were between 18 and 64 years old, while only 7 (1%) were older. When

asked about their profession, 510 (71,5%) work in the Medical Field, 100 (14%) in Nursing, 43 (6%) in Microbiology, and 33 (4,6%) are Nursing Assistants; the rest of the 27 participants (3,9%) are Social Workers, Radiology Technicians and Psychologists. Something very important to notice is only about 298 (41.8%) of them are working either on a First Level Hospital, on Triage area or in Internal Medicine areas, while 201 (28.2%) work in Gynecology, General Surgery, Pediatrics, Epidemiology/Public Health, Laboratory or Field Work areas. Also, 214 participants (30%) mentioned they work in other areas, but we didn't ask them to specify. This question has to do as well with the type of system or organization were they work, being 429 (60,2%) from the public health sector, 195 (27,3%) from the private sector and 89 (12,5%) from both. Risk factors related, 421 (59%) participants do not have any comorbidity, but 99 (13,9%) suffer from obesity, 82 (11,5%) from high blood pressure, 33 (4,6%) from diabetes, 20 (2,8%) from chronic pulmonary disease and 4 (0,6%) from hepatic diseases; 128 participants (18%) said they suffer from other comorbidities, but we didn't ask them to specify. Also, we asked about pregnancy status, were only 4 people (0,6%) stated they were currently pregnant.

Now, talking about occupational exposure, you can see in **Fig 1** what kind of safety protective equipment were they receiving in their work centers. Regardless of that, an incredible amount of 543 (76,2%) participants have had the need to buy their own personal protective equipment. Following up on this matter, 355 (49,8%) of them had the difficulty of buying their equipment because of economic difficulties (48,1%), lack of equipment in stores (22,4%) and both (22,2%). Independently of having to buy or not their own personal protective equipment, 487 (68,3%) have had the need to reuse single use equipment, especially because 231 (32,4%) specify they have been forced to work without equipment due to the high necessity of healthcare workers. In addition, 62 (8,7%) of them don't have an available place where to frequently wash their hands with water and soap.

Regarding COVID-19 symptomatology, only 108 (15,1%) have developed it, but 162 (22,7%) have done COVID-19 diagnostic tests. The impact of this is that about 68 (9,5%) participants have been forced to in Nursing work even when

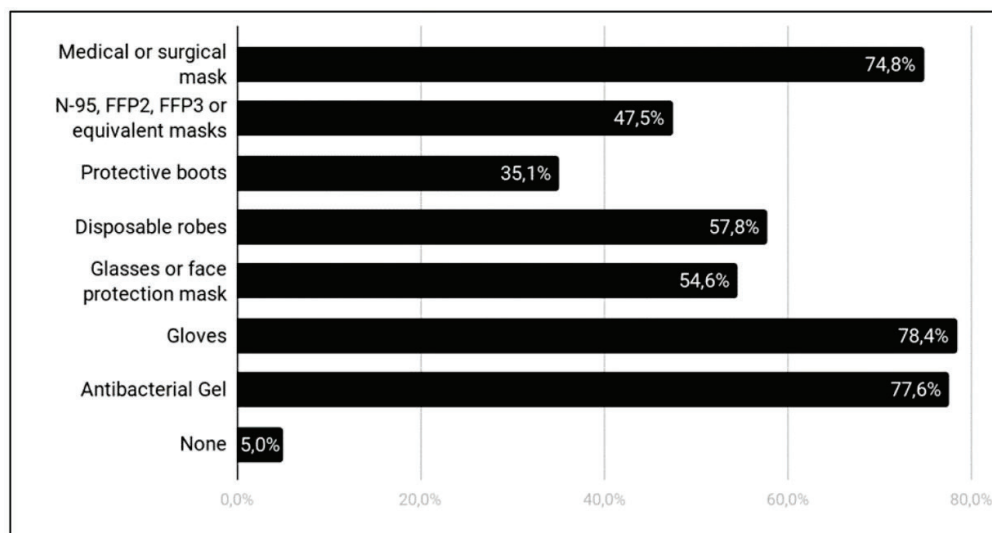


Fig 1. Personal Protection Equipment being given to the healthcare workers by their workplaces.

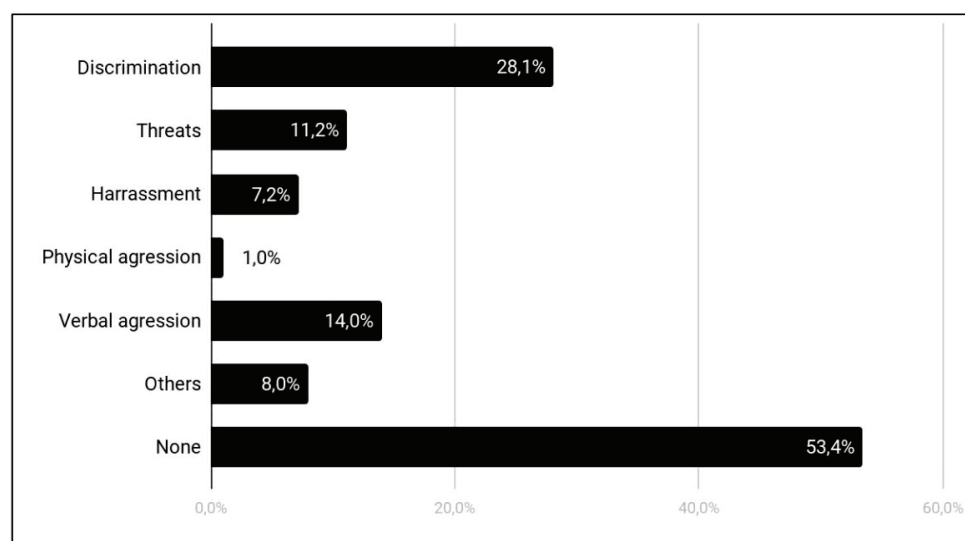


Fig 2. Type of abuses suffered by the healthcare workers due to COVID-19.

having COVID-19 symptomatology. 367 (51,5%) of the participants mentioned that their work places promotes having clean work spaces (doors, desks, phones, materials, etc.) and 249 (34,9%) mentioned that just sometimes. Also, only 408 (57,2%) confirmed that their hospitals and centers promote having common areas cleaned periodically. In their work spaces, 408 (57,2%) affirmed their centers have developed specific policies and guidelines to treat suspected and confirmed COVID-19 cases and 289 (40,5%) mentioned their centers have been implementing strict control and monitoring over the health of their employees; 213 (29,9%) stated that the health workers have access to COVID-19 diagnostic tests in their centers, 84

(11,8%) ignore the safety measures taken in their centers and 123 (17,3%) mentioned none has been done, regarding the previous actions. However, despite this, 209 (29%) participants mentioned that in their hospitals or healthcare centers they don't have specific isolation areas for suspected and confirmed COVID-19 patients.

When asked about receiving conferences and trainings about COVID-19, personal protective equipment and patients treatment, just 495 (69,4%) stated they received this from their centers, and they qualified them as excellent (6,3%), very good (15,4%), good (19,5%), regular (17,4%) and bad (11,9%).

In the mental health section, as you can see in

**Fig2**, the healthcare workers have been suffering from all types of abuses because of their jobs. This also affects their stress levels, were 628 (88,1%) has been suffering from occupational stress higher than the usual, and adding to that, 397 (55,7%) feel they have had work overload, mainly because of having more working hours (38,8%). Unfortunately, 533 (74,8%) mentioned they don't have the psychological support from their centers and employers and, 567 (79,5%) said their workplaces have not participated in organizing campaigns about reducing stigma to health workers because of the public's fear of getting infected.

## DISCUSSION

The incidence of COVID-19 infection is observed more frequently in adult patients, mostly men with a median age between 30 and 60 years.<sup>7</sup> In the study, 99% of the participants were between 18 and 64 years old, and they correspond to the 100% of the participants that have had COVID-19 symptomatology; none of the participants above 64 years have had it. The virus is more likely to infect people with chronic comorbidities such as cardiovascular and cerebrovascular diseases and diabetes.<sup>8</sup> therefore, 30% of the study population have a higher risk because of having cardiovascular and/or metabolic diseases. The highest proportion of severe cases occurs in adults over 60 years of age and in those with certain underlying conditions, such as those mentioned above.<sup>7</sup> One of the main mechanisms of Acute Respiratory Distress Syndrome is the cytokine release syndrome, which is an uncontrolled systemic inflammatory response that will cause ARDS and multiple organ failure, and will ultimately lead to death in severe cases of infection.<sup>9</sup> Because of that, it is mandatory to limit the number of people caring for the COVID-19 positive cases to a minimum, with specific care, planning and isolation, with individual protection and disinfection measures established until necessary.<sup>10</sup>

The International Labor Organization (ILO), gives the following guidance for organizations to follow: application of preventive and protective measures is carried out efficiently and consistently, relevant policies to be established and commitments to be made. In addition, for the prevention and mitigation of

COVID-19 at work, they facilitate the following checklist: respect physical distancing, provide hand sanitizer or soap and water and promote a clean environment, facilitating trainings and communication for both management and workers on the measures taken to prevent the risk of exposure to the virus and give personal protective equipment to the personnel.<sup>4</sup> Unfortunately, regardless of all the previous recommendations, specifically about having suspect and confirmed patients isolated and in special rooms, 29% of the study population stated that in their health centers, they don't even have isolation areas for suspected or confirmed cases, which poses a threat for the rest of the personnel and patients. Worse than that, 30,6% of the participants affirmed they haven't even received training or conferences about COVID-19, the correct use of personal protective equipment and the attention lines for suspect or confirmed cases.

The assistance and/or support team must be duly protected, with the recommended individual protection equipment, following the established placement and removal regulations, in a supervised manner. The WHO recommends using the following personal protective equipment for care depending on the type of area or attention were the worker is: triage (hands hygiene, medical mask, protective glasses and gloves), attention for suspected or confirmed cases without needing (same as before plus disposable robe) and when they need (same as previous but using N95 or FFP2 mask instead of medical mask).<sup>11</sup> Despite this, only about 74,8% of the study population is receiving at least a medical or surgical mask, 54,6% protective glasses, 74,8% gloves and only 47,5% receiving N-95, FFP2, FFP3 or equivalent masks. When analyzing this matter, it is highly important to point out that it gives the healthcare workers the responsibility to buy their own protective equipment, even though they should be receiving it from their institutions, but an impressive 76,2% have had the need to do so because of the lack of it. This also poses a threat for the workers who don't have the possibility to buy their equipment, due to economic adversities or unavailability of equipment in the market, leaving them with the only alternative, to reuse single use equipment (68,3%). In the worst-case scenarios, a significant group (32,4%) have had to work

in their health centers without their personal protective equipment because of not receiving it.

All of the previous work conditions and risk factors have affected the mental health of the health personnel, and when adding the different type of abuses they suffer because of being healthcare workers, you discover that the majority (88,1%) feels more exposed to labor stress than usual and only 25,2% has the openness from their workplaces or employers in order to talk and express what they feel and receive professional help, therefore affecting their motivation, energy and efficiency. The manual for the protection of health workers and emergency response teams, developed by the WHO and the ILO in 2018, lists various measures that should be applied to prevent work-related stress among these workers, which could also be applied to other front-line workers during an epidemic. These measures include the following: holding multidisciplinary sessions in order to identify concerns to work on problem-solving strategies, establishment of regulated rest periods to provide sufficient breaks during the working day, encourage time for physical health by encouraging workers to maintain healthy eating habits, provision of psychological support for workers, organizing campaigns aimed at reducing the stigma of exclusion of health workers due to the fear of the population of contagion and encouraging them to value the role of people who are at the forefront of the fight against the epidemic, so that they are proud of what they do.<sup>4</sup>

The healthcare workers are at a higher risk of COVID-19 infection not only because of having individual biological risk factors such as high blood pressure, obesity, diabetes, chronic

pulmonary disease and others, but also because of the lack of adequate guidelines being followed by health institutions in their countries and not having specialized areas dedicated for COVID-19 patients. Policies and strategies need to be implemented in order to not burn out the personnel due to a high work overload because of the demand of the hospitals and centers. Also, it is a threat to their lives and to other patients the fact that they are not receiving enough personal protective equipment, getting even more exposed to unhealthy work conditions and the risk of getting infected and possibly having serious complications. Finally, there is still a significant percentage of health centers not carrying out COVID-19 training for their personnel and teaching them the official treatment guidelines, the correct use of personal protective equipment, diagnostic methods, etc., and not even that, but also, not raising awareness among patients and general public against stigma and abuses towards the healthcare workforce.

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## CONCLUSION

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Besides providing the necessary equipment and safety measures and protocols to the health workforce, it is fundamental that institutions adopt new strategies that ensure the security of them. However, it is not only responsibility of the institution, but also of the health worker to identify any risky actions or procedures they may be exposed to, not only at the physical level, but also the mental and emotional one. There is a need for more systematic policies that provide an holistic approach to the occupational risks of health workers.

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