SANUS. 2022;7:e311
DOI: https://doi.org/10.36789/revsanus.vi1.311
www.sanus.unison.mx

REVIEW

Working conditions of healthcare personnel facing the pandemic in Latin America: an integrative review

Condiciones de trabajo del personal de salud que enfrenta la pandemia en Latinoamérica: revisión integrativa

Condições de trabalho dos profissionais de saúde frente à pandemia na América Latina: uma revisão integrativa

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Received: 07/27/2021
Accepted: 05/26/2022

Abstract

Introduction: Healthcare personnel are the most exposed to infection while they care for the patients with COVID-19. Knowing the studies carried out with respect to the working conditions of the healthcare personnel in Latin America, will enable the detection of the necessary and less treated lines of research, deficiencies and to trace the main lines of work for their solution. **Objective**: To determine, by means of an integrative literature review, the working conditions of healthcare personnel who faced the pandemic in the region, its consequences and the behavior of the responsible stakeholders. **Methodology**: Integrative review applying the Ganong method, by means of pairs of key words. The documents were classified by categories of study such as working conditions, health consequences of inadequate conditions and the role of the stakeholders responsible for ensuring satisfactory working conditions. Twelve original and review articles were selected, which provided quantitative data from research carried out with healthcare personnel in the region. Duplicate publications, reflections, letters and other articles that did not provide elements of substantiation were excluded. **Results**: Results show high percentages of deficit of personal protection equipment, extreme working conditions that caused infection, lack of biosecurity measures, insufficient training, labor and social security rights were violated by the stakeholders responsible for guaranteeing

ISSN: 2448-6094
Universidad de Sonora

them. **Conclusions**: Working conditions were inadequate and unsafe. Healthcare personnel were affected physically, psychologically and economically, thus, demanding governments and health institutions to play a role in their solution.

Key words: Occupational health; Occupational hazards; COVID-19; Personal protection equipment; Public health policies (DeCS).

Resumen

Introducción: El personal de salud es el más expuesto al contagio en su atención a pacientes con COVID-19. Conocer los estudios realizados acerca de las condiciones de trabajo del personal de salud en latino américa, permitirá detectar las líneas de investigación necesarias y menos tratadas, deficiencias y trazar líneas de trabajo para su solución. **Objetivo:** Determinar mediante revisión integrativa de literatura, las condiciones en que se desarrolla el trabajo del personal de salud que enfrentó la pandemia en la región, sus consecuencias y el comportamiento de los actores responsables. **Metodología:** Revisión integrativa aplicando método Ganong, mediante pares de palabras clave. Los documentos se clasificaron por categorías de estudio: condiciones de trabajo, consecuencias para la salud de condiciones inadecuadas y el papel de los actores responsables de garantizar condiciones de trabajo satisfactorias. Se seleccionaron 12 artículos originales y de revisión que aportaron datos cuantitativos de investigaciones realizadas con personal de salud de la región. Fueron excluidas publicaciones duplicadas, reflexiones, cartas y otros artículos que no aportaron elementos de fundamentación. **Resultados:** Muestran altos porcentajes de déficit de equipos de protección personal, condiciones de trabajo extremas que provocaron contagio, falta de medidas de bioseguridad, capacitación insuficiente, se violaron derechos laborales y de seguridad social por los actores responsables de garantizarlos. **Conclusiones:** Las condiciones de trabajo fueron inadecuadas e inseguras. Se produjeron, afectaciones físicas, psicológicas y económicas al personal de salud, lo que demanda que los gobiernos e instituciones de salud cumplan el papel que les corresponde para su solución.

Palabras clave: Salud ocupacional; Riesgos laborales; COVID-19; Equipo de protección personal; Políticas públicas de salud (DeCS).

Abstrato

Introdução: Os profissionais de saúde são os mais expostos à infecção enquanto cuidam dos pacientes com COVID-19. Conhecer os estudos realizados sobre as condições de trabalho dos profissionais de saúde na América Latina permitirá detectar as linhas de pesquisa necessárias e menos tratadas, deficiências e traçar as principais linhas de trabalho para sua solução. **Objetivo:** Determinar, por meio de uma revisão integrativa da literatura, as condições de trabalho dos profissionais de saúde que enfrentaram a pandemia na região, suas consequências e o comportamento dos atores responsáveis. **Metodologia:** Revisão integrativa aplicando o método Ganong, por meio de pares de palavras-chave. Os documentos foram classificados por categorias de estudo como condições de trabalho, consequências para a saúde de condições inadequadas e o papel dos atores responsáveis por garantir condições de trabalho satisfatórias. Foram selecionados 12 artigos originais e de revisão, que forneceram dados quantitativos de pesquisas

realizadas com profissionais de saúde da região. Foram excluídas publicações duplicadas, reflexões, cartas e outros artigos que não trouxessem elementos de fundamentação. **Resultados:** Os resultados mostram altos percentuais de déficit de equipamentos de proteção individual, condições extremas de trabalho que causaram infecção, falta de medidas de biossegurança, treinamento insuficiente, direitos trabalhistas e previdenciários foram violados pelos atores responsáveis por garanti-los. **Conclusões:** As condições de trabalho eram inadequadas e inseguras. Os profissionais de saúde foram afetados física, psicológica e economicamente, exigindo, assim, que governos e instituições de saúde desempenhem um papel na sua solução.

Palavras-chave: Saúde ocupacional; Riscos ocupacionais; COVID-19; Equipamento de proteção pessoal; Políticas publicas de saúde (DeCS).

Introduction

The SARS-CoV-2 coronavirus disease was first reported in China on December 12, 2019, and reached Latin America through Brazil on February 25, 2020 [(1)]. Within days, on March 11, the World Health Organization (WHO) declared Covid-19 a pandemic [(2)]. The lack of global preparation to face a similar pandemic and the need to take urgent measures was notified months before the first cases were reported [(3)].

According to data from a study that included 185 countries, regarding morbidity and mortality due to COVID-19, at world level, the average infection and mortality rates were 16,482 and 291 cases per 100,000 inhabitants, respectively [(4)]. Although the incidence was global, the regions with the highest incidence and mortality rates were North America, Europe and Central Asia, while the lowest rates were in South and East Asia and sub-Saharan Africa.

In the case of Latin America and the Caribbean, the average incidence rate was around 12,000 cases per 100,000 inhabitants, while the mortality rate was close to 250 cases per 100,000 inhabitants, although these are high figures, they are below the world average. Studies have shown that the higher incidence has been associated with the presence of chronic diseases and population aging, in addition to the low capacity of health services, especially in high social inequality contexts [(4)].

In Latin America, health systems were already deficient before the pandemic began, so many collapsed; shortage of resources, healthcare personnel, equipment and means of protection, in addition to the inability

of governments to control the situation became evident and, unfortunately, these situations continue to worsen (5). The lack of safe working conditions causes health problems, which is even more critical in the case of Healthcare personnel who are exposed to the infection due to the nature of the work they perform. The effort and leading role assumed by healthcare personnel has earned them the recognition of the population, based on the understanding of the importance and complexity of their task. Nevertheless, they have also been the target of acts of violence, rejection and discrimination [6]. Healthcare personnel faced the greatest risks, stress, long, tense and overloaded workdays, in which permanent concentration and vigilance were required to keep protective measures [7]. These extreme working conditions, maintained during this period, have led to high rates of infection and even death [8].

WHO has issued recommendations on the proper use of personal protection equipment (PPE) consisting of gloves, medical (surgical) mask, goggles, face shield and medical gown [9,10]. However, with the development of the pandemic and the increase in new cases, a disruption in the supply chain, increase of prices and monopolization of PPE equipment, thus, resulting in shortages that jeopardizes the safety of healthcare workers [11].

Therefore, the question arises as to whether the working conditions of healthcare personnel is adequate so they can perform their duties in a satisfactory and safe manner, as well as the factors that affect such working conditions. This is essential in order to take the necessary measures and, therefore, contribute to the control of the pandemic, so that the care and attention to health workers should be a priority in each country. To this end, an integrative review of the literature was carried out with the objective of determining the conditions in which the work of the healthcare personnel who faced the pandemic in the region was implemented; its consequences: and the behavior of the responsible stakeholder. A broad search for research based on surveys of healthcare personnel and statistical data on these issues was carried out.

Methodology

The integrative review followed Ganong's method [12]. This author suggests that the literature review for the assessment of other research conducted should be carried out in six stages, which were completed in this study:

1. Question that focuses the review and indicates its objectives. That is, in this case: What does the literature say about the working conditions of healthcare personnel dealing with the Covid-19 pandemic in Latin America, what have been the consequences in their health and what has been the work of the stakeholders actors involved in this matter?

2. Inclusion and exclusion criteria of the reviewed documents: A total of 433 documents were reviewed, in Spanish, English and Portuguese. These documents were obtained from the following databases: PubMed, Elsevier, Scielo, Scopus and Google Scholar, as well as from the websites of the World Health Organization and the Pan American Health Organization. The search was performed using the DeCS descriptors, linked by the Boolean operators AND and OR in different combinations of pairs formed by the descriptors, occupational health OR occupational risks, occupational risks AND COVID-19, personal protection equipment AND COVID-19 and public health policies AND COVID-19. Original and review articles were included, written from January 2020 to June 2021, which discussed the issues of occupational safety and risks, the consequences for the health of personnel who worked during the Covid-19 pandemic in Latin America. In addition, information was compiled from institutions, organizations and Countries using data related to the subject and their work to support healthcare personnel. Duplicate publications, reflections, letters and other articles that did not provide elements for the substantiation of the topics covered were excluded. The documents were classified by their content according to the categories to be covered in the review, organized in tables, by groups of the established topics, according to the descriptors and the type of research carried out. For the assessment of the results, a sample of 10 quantitative and 2 qualitative studies were selected from Latin American countries, mainly through surveys of healthcare personnel.

3. Selection of the results of interest in the studies, according to the different categories that made up the search. The matrix for data assessment included the title, objectives, categories or topics covered, main findings and conclusions of each research selected for the sample.

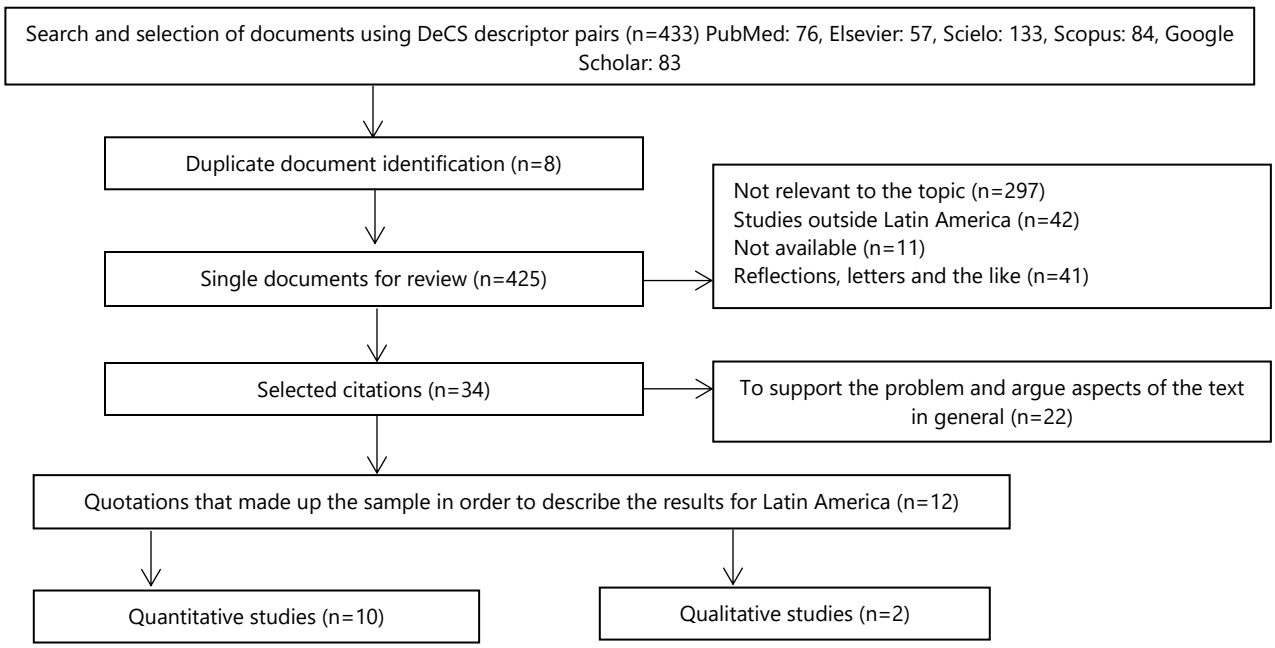
4. Assessment and summary of the main results presented in the literature, identifying the aspects that were consistent and the differences between the studies.

5. Discussion and interpretation of the results, using the data identified in the previous selection and assessment stages.

6. Summarized and direct writing of the main evidences, for the preparation of the complete text.

Figure 1 shows the diagram summarizing the steps that were followed to search for and select the documents to prepare the integrative review.

Figure 1. Diagram of the phases involved in the search and selection of documents.



Source: Own development.

Results

Table 1 lists the articles that were part of the sample, according to their author, title, type of study, subject-matter studied and the topics dealt with. Twenty five percent (25%) were conducted with samples that included healthcare personnel from 13, 17 and 20 Latin American countries [6,13,14]. The topics covered a wide range of problems, such as the availability of PPE [6,13,14], training [6,13,13], physical [6,13,14] and mental health [13], institutional care [13-14] and social security [6]. Of the remaining studies, 25% worked with samples in Peru [15,18,22], 16.8% in Ecuador [16,20], Colombia [21], Mexico [23], Argentina [19] and Guatemala [17], each of these four countries comprising 8.3% of the sample. Some 16.8% of these studies, such as those of Argentina [19] and Peru [18], dealt with all of the topics. Thus, 41.8% of the studies assessed the problem in a broad sense, in terms of countries and topics [6,13,14,18,19]. Some 33.2% focused on the availability of PPE, physical safety and working conditions [15-17,20] and 25% fundamentally assessed mental health, among other topics [21-23]. The samples were comprised of physicians and nurses, laboratory personnel and personnel from other clinical, administrative and social security areas.

Table 1. Selected articles presenting quantitative studies with healthcare personnel in Latin America, January 2020 to June 2021. (n=12).

Article (author, title and reference number)	Study type	Subjects covered
Valdez, Cámera, De la Serna, Abuabara, Carballo, Hernández, et al. Attack on health care personnel during the Covid-19 pandemic in Latin America [6].	Quantitative. Compilation of different studies in 17 countries	Health impacts, violence, social security, training, PPE
Medina, Quintanilla, Juarez, Shafick. Occupational exposure to Covid-19 in Latin American healthcare personnel, May 2020 [13]. Medina, Quintanilla, Juárez, Shafick.	Quantitative with surveys of 713 healthcare personnel in 13 countries	PPE, biosafety measures, mental health, training, institutional responsibility
Delgado, Wyss, Pérez, Sosa, Ponte, Mendoza, et al. Personal safety during the Covid-19 pandemic: Realities and perspectives of healthcare workers in Latin America [14].	Quantitative with surveys of 936 health care personnel from 20 countries	PPE and institutional support for physical security
Raraz, Allpas, Torres, Cabrera, Alcántara, Ramos, et al. Working conditions and protective equipment against Covid-19 in healthcare personnel, Lima-Peru [15].	Quantitative with 213 Peruvian healthcare personnel	PPE, discrimination within the institution, test performance

Salvatierra, Gallegos, Orellana, Apolo. Biosecurity in the Covid-19 pandemic: A qualitative study on nursing praxis in Ecuador 2020 [16].	Qualitative with interviews to 5 nurses in Ecuador	Biosafety measures, PPE availability
Chávez, Velásquez, Ramírez, Barrera. Availability of supplies and personal protection equipment for health system personnel [17].	Quantitative with 1004 healthcare personnel in Guatemala	Availability of PPE and biosafety measures
López, Zuta. The protection of the fundamental right to health of healthcare personnel in pandemic times [18].	Qualitative and quantitative with 7 experts from Peru	Right to physical security, training, public policies, PPE
Ortiz, Antonietti, Ramos, Romero, Mariani, Ortiz, et al. Concerns and demands regarding Covid-19. Survey of healthcare personnel [19].	Quantitative with 5670 healthcare personnel in Argentina	PPE, training, physical security, communication, institutional support
Margoya, Rivera, Pacheco, Olivarez. Effects of occupational stress in health care workers due to coronavirus pandemic in Ecuadorian hospitals [20].	Quantitative with 84 healthcare personnel in Ecuador	Mental and physical health effects
Monterrosa, Dávila, Mejía, Contreras, Mercado, Flores. Work stress, anxiety and fear of Covid-19 in Colombian general practitioners [21].	Quantitative with 531 practitioners in Colombia	Labor safety, governmental support, mental and physical health
Vallejos. Emotional effect of COVID-19 in healthcare personnel during the pandemic-Red Asistencial Lambayeque [22].	Quantitative with 79 healthcare personnel in Peru	Mental health issues
Juarez. Burnout syndrome in healthcare personnel during the Covid-19 pandemic: an orange warning in mental health [23].	Quantitative with 296 healthcare personnel in Mexico	Mental health issues, violence

Source: Own development.

Working conditions of healthcare personnel

Regarding biosafety resources and measures, the main problems detected in the studies included in the sample are summarized in Table 2. The most reiterated problem in the investigations was the lack of PPE in 50% of the studies [13-18]. The percentages of shortages far exceeded 50% of the survey respondents in most of the studies conducted. The shortage of this equipment led to the fact that in many cases, healthcare personnel had to buy them with their own funds and reuse them, aspects treated with figures in 16.8% of the studies [13,18]. The percentages indicated that more than 70% of the workers were in this situation. The lack of control tests and verification of infection was a problem raised in 25% of the studies [13,15,18]. According

to these, more than 70% of healthcare workers did not have access to them, at least as often as necessary. Extended working hours beyond normal working hours was another problem quantified in 25% of the studies [13,15,18]. Workers affected by this situation comprised more than 50% of the survey respondents. Moreover, 16.8% of the studies that compared the working conditions of healthcare personnel working in the public sector with those in the private sector were consistent in indicating that the percentage of supplies were higher in the private sector [17,19].

Table 2. Main shortcomings detected in the use of appropriate means of protection and biosecurity measures for healthcare personnel caring for Covid-19 patients in Latin America, from January 2020 to June 2021 (n=12).

Shortcomings detected	Percentage of affectation	Quotation
Healthcare personnel should acquire PPE with their own funds.	76.2%	(13)
	71.4%	(18)
Lack of PPE, especially masks, face shields, goggles, protective boots and others for public healthcare personnel.		
	43.9% without N95 masks	(14)
	67.4% without face shields	
	52.5% without N95 masks	(13)
	64.9% without protective boots	
	45.4% without screens or glasses	
	62.7% without N95 masks	(15)
	48.3% without face shields	
	40.6% never received PPE	
	Lack of availability and quality of PPE	(16)
	60.0% without PPE	(17)
	60.0% sin EPP	
	73.0% without PPE in areas of maximum exposure to the virus:	
	• 32.2% without disposable gowns • 23.2% without N95 masks • 34.2% without glasses	
	85.7% without complete PPE	(18)
Need to reuse disposable media	68.3%	(13)
	71.4%	(18)
Non-compliance with biosafety protocols, due to lack of preparation of healthcare	8.7% no hand washing facilities	(17)
	2.2% to 8.7% with deficit of water, soap and disinfectant solutions	

personnel and/or lack of the necessary resources.		
Failure to perform virus detection and control tests	5.9% never had tests 35.1% only if symptoms were present 70.1% without access to tests 71.4% were not tested	(15) (13) (18)
Intensive working hours, due to the high number of cases to be handled and excessive working hours.	55.0% worked 12-hour days 19.2% more than 12 hours 38.8% above-normal working days 71.4% above-normal working days	(15) (13) (18)
Personnel working in the private sector had greater availability of PPE than those working in the public sector.	80.7% of the private sector had institutional resources, compared to 69.1% in the public sector. 66.0% of the private sector had the required PPE, compared to 30% in the public sector.	(19) (17)

Source: Own development

In the aspect related to the training of healthcare personnel, 25% of the quantitative research reviewed provided figures about it [13,18,19]. Of the personnel surveyed, 69.4% had never received training and 11.8% were unaware of biosecurity measures [13], while 65.4% considered that they did not have the necessary knowledge and 7.8% were completely unaware of the biosecurity measures to be followed with infected patients [19]. Additionally, another study showed that 71.4% of the survey respondents did not receive training for their work [18].

Health consequences of inadequate working conditions

For the physical safety of the personnel, the main problems are listed in Table 3, these were the lack of guarantees for the physical safety of the healthcare personnel, due to the aforementioned problems, which caused frequent infections, where 16.8% of the studies reported that more than 70% of the survey respondents considered this to be the case [18,21]. Physical violence exercised against healthcare personnel was another of the issues concerned with figures comprising 8.3% of the researches, although the incidence percentages were not high [6]. In addition, there were different types of discrimination, dealt with in 16.8% of the studies, both promoted by the institutions themselves, which placed their own workers in unequal

conditions of protection [15], and the social stigmatization to which healthcare personnel were subjected, simply because they were healthcare personnel [21].

Table 3. Affectations to the physical safety of healthcare personnel as a consequence of inadequate working conditions from January 2020 to June 2021. (n=12).

Affectations detected	Amount or percentage of affectation	Quotations
The necessary physical protection is not considered to be in place, so that personnel are often victims of infection.	77.0% 71.4%	[21] [18]
Violence (including physical violence)	40 cases in Mexico, 20 in Colombia, 10 in Argentina, 9 in Venezuela, 8 in Paraguay, 4 in Honduras, 4 in Panama, 2 in Peru, 1 in Costa Rica and 1 in El Salvador. Nursing personnel accounted for 40.0%, physicians for 40.0%. In 27.0% of the incidents, the aggression took place in the health care institution itself. Physical violence accounted for 21.0% and police abuse for 9.0%.	[6]
Discrimination due to unequal distribution of PPE, age, support personnel	39.0% Younger people, without a permanent contract, with less experience more frequently receive incomplete PPE.	[21] [15]

Source: Own development.

For the psychological safety of healthcare personnel who worked facing the pandemic, the main affectations are shown in Table 4. 41.7% of the quantitative researches showed levels of stress, anxiety and depression above those considered normal [13,20-23]. A total of 8.3% of the studies reported the presence of burnout syndrome in 47.6% of the participants in the study [23]. Percentages lower than 15% corresponded to personnel without mental health conditions, an aspect raised in 16.8% of the studies [21,22].

Table 4. Affectations to the psychological safety of healthcare personnel as a consequence of inadequate working conditions, from January 2020 to June 2021 (n=12).

Affectations detected	Percentage of affectation	Quotations
Higher than usual work stress	88.1%	(13)
	52.3% with some level of stress	(20)
	76.5% feels stressed	(21)
Depression, anxiety and stress levels:		
• Low	50.0%	(22)
	35.0%	(21)
• Medium	23.0%	(21)
	60.0% (nursing personnel)	(22)
	44.1%	(23)
• High	5.5%	(21)
Burnout syndrome or professional fatigue	47.6%	(23)
Only small percentages presented normal mental health conditions.	3.8%	(21)
	14.3%	(22)

Source: Own development.

Behavior of the individuals responsible for guaranteeing adequate working conditions for healthcare personnel

Table 5 lists the main shortcomings identified in the work carried out by the country and institutions responsible for creating adequate working conditions for healthcare personnel so that they can perform their duties with safety and economic and social support.

Twenty-five percent of the studies noted that the country and health institutions did not make the required efforts to guarantee adequate working conditions [14,18,21]; this was the opinion of more than 70% of the survey respondents. The insufficient scope of the social security and worker protection law was another problem addressed in 16.8% of the surveyed. In one of the studies, it was stated that the law did not comprehend the state and institutional responsibility to guarantee physical and social protection [6] and in the other study, it was stated that the law considered these aspects, but they were not complied with [18]. Another problem detected by 16.8% of the studies was the lack of concern of the institutions to solve internal

labor conflicts and provide psychological support to their workers, difficulties created by the pandemic conditions [13,19].

Table 5. Inadequacies detected in the behavior of the actors responsible for contributing to the creation of adequate working conditions for healthcare personnel, from January 2020 to June 2021 (n=12).

Shortcomings detected	Percentage of affectation	Quotations
The government has not done enough in relation to pandemic control and support for healthcare personnel.	Opinion of 77.4% of the surveyed physicians.	[21]
The institutions did not express any concern for creating safety conditions at work	71.4% said they did not allocated time or resources to training. 71.4% considered they did not provided safety support. It was perceived that the institution did not guarantee job safety, or the replacement of personnel in case of getting ill.	[18] [18] [14]
Insufficient scope of the labor legislation regarding the responsibility of the country or the employer in the provision of PPE and social safety guarantees for infected personnel	The law does not stipulate the law to guarantee PPE and social security. 71.4% considered that the law has provided for protection but has not been enforced.	[6] [18]
Lack of an institutional mechanism to provide accurate information to healthcare personnel	Lack of an institutional mechanism to provide accurate information to healthcare personnel Opinion of 37.8% of the surveyed	[19]
There was no adequate conflict management in the institution, and there was a lack of spaces to address the concerns, psychological support and workers tensions related to the effects of the pandemic in cases of leave of absence and absenteeism.	Opinion of 46.1% of survey respondents. 74.8% (without psychological support)	[19] [13]
Failure to involve the community to abide by and support the established containment measures	Opinion of 97.0% of surveyed physicians.	[21]

Source: Own development.

Discussion

Based on the objective established in order to determine the problems that affected working conditions of healthcare personnel who confronted the pandemic in the region, its consequences and the behavior of the responsible stakeholders, it has been shown that PPE was scarce in general [13-18]. The percentages indicating this situation are high, even for personnel with maximum exposure to the virus [18]. Studies carried out by

means of surveys made to healthcare personnel in several Latin American countries agreed that workers in the public sector had greater shortages of PPE and worse working conditions than those in the private sector [17,19], were forced to reuse equipment due to shortages and had to acquire them with their own funds, which is unacceptable in such a dangerous, generalized and highly contagious pandemic situation [13,18]. The reuse of these means, although not recommended, is possible in cases of extreme shortage, under supervision and control measures that were not carried out [24].

In some cases, minimum health conditions and disinfectant solutions were not available [17]. Moreover, in many cases, the virus test was applied only if the worker showed symptoms, which contributed to infection in asymptomatic cases [15]. Most of the personnel worked shifts of 12 hours or more [15]. The combination of these factors was the main cause affecting the physical safety due to infection of healthcare personnel and their families, where the workers in the region were the most affected worldwide [16,18,25]. However, there are no regular statistics or studies that provide accurate figures by country or continent [25].

Insufficient training to handle patients and lack of PPE were causes of infection [6]. Few quantitative studies were found that addressed training levels in the region. The studies consulted agreed that there was a deficiency in the training of healthcare personnel to do their work safely and a poor knowledge of the safe handling of PPE and infected patients [13,19]. According to WHO data, of the 43.5 million health workers worldwide, half were nurses, of whom at least 2 million were not qualified [5]. This indicates the need for ongoing training of healthcare personnel, which is a major weakness in the system [10,14,21]. Globally, although there are no accurate data, it was suggested that around 17,000 healthcare personnel died during the year 2020 and that every 30 minutes a healthcare personnel died as a victim of the pandemic, really alarming numbers [26]. It is estimated that between 10 and 20% of healthcare personnel in each country were infected, with nursing personnel being more affected due to their direct contact with patients [6]. In the Americas, deaths of healthcare personnel due to infection accounted for one out of every seven deaths due to COVID-

19 [25]. The high risk of infection, together with the insufficient availability of PPE and insufficient safety and patient management protocols, led to this alarming situation among healthcare personnel [6].

Physical insecurity due to violence against these personnel was manifested in very few cases in several countries [6]. However, it is notorious that some were promoted by the police itself and some governments did not take the necessary measures to punish those responsible [6]. Quantitative studies on violence against healthcare personnel are scarce. The results show that there were different forms of discrimination against healthcare personnel [15,21]. These are aspects that should have been addressed by the institutions that even provoked them in several cases [21]. Psychological safety is as important as physical safety, as it is part of the necessary biosecurity, since it guarantees the individual's integrity and psychic balance [27]. It allows the personnel to be able to perform their work in a conscious manner and to apply safe protocols for the treatment of the patients. According to studies, the extreme working conditions mainly caused anxiety, fear and stress, which led to unfavorable psychological states and affected work safety [27]. The causes of these effects were the unavailability of PPE, the increase in the number of cases and the insufficient number of healthcare personnel [22].

Another affectation detected to a limited extent was burnout syndrome or professional exhaustion, which was manifested by exhaustion, indifference to work and reduction in professional efficiency [23]. This is a problem that was present before the onset of the pandemic, but was exacerbated by extreme working conditions.

In the studies consulted, great differences were observed in their results regarding the percentages of those affected from the psychological point of view. Stress was the most frequent affectation in its mild form [13,21,23]. There is agreement among authors that the workers who showed normal psychological conditions were a small percentage [21,22]. No experiences were found describing the implementation of measures for the necessary psychological care of healthcare personnel. Although it is known that the extreme conditions

in which healthcare personnel work lead to psychological affectations and stress, these workers usually did not receive training or treatment from their institutions [6,13].

Since the end of the 19th century, when it began to be considered that diseases could be controlled, the State began to take this role, as a stakeholder with the power and means to reach the greatest number of population, especially the most vulnerable and those with the most limited resources [28]. Health is a public good, a human right and therefore is the responsibility of the State, as part of the social protection of the population, and it is therefore up to the State to plan resources and implement actions and institutional instruments for its care [29]. However, since the last decades of the last century, the establishment of neoliberalism as an economic model in many Latin American countries removed the government's priority for public spending on health, including that of healthcare personnel [30]. As a result, they do not always have free access to diagnosis tests, do not have health insurance and in cases of infection they had to pay for their own medical expenses or those of their family members [18]. Despite the steady increase in the number of infections in Latin America, which requires more resources, public health funding and budgets have been reduced in countries such as Peru, Brazil, Colombia, Argentina and Ecuador [18,24,31,32].

However, a study of health policies applied during the pandemic in ten Latin American countries showed that there was a tendency to increase resources in the health sector, using emergency funds, budget reallocations, indebtedness and increased taxes on the highest incomes [33]; additionally, many of the policies did not involve the communities, a fundamental aspect for the control of the pandemic [33]. There is a need to strengthen legislation and oversight by governments on the responsibility and provision of PPE, other means and measures for safety and social protection. The necessary expenditures in PPE, personnel training and budget for the payment of salaries in the necessary positions, according to the demand of medical personnel, among other public health needs, mean a high investment that is less and less considered in governmental budgets [30]. The reduction of budgets had led to a gradual reduction of the salaries of medical personnel, who have also experienced payment problems [34].

Despite the real economic limitations to acquire PPE, there are measures that can be taken in the social and psychological order. Therefore, it is recommended that the Ministry of Public Health, in its leading role, guide and control the work of health institutions in terms of the physical, economic, psychological and social care of their personnel. A fundamental aspect is the redesign of the social security law, which should financially support all healthcare personnel. From the preventive point of view, the creation of emergency reserves of health equipment and materials, essential for health crisis situations, should be considered, as well as working constantly on the training of healthcare personnel to face epidemics.

The small number of quantitative research studies found is a limitation in this study. Therefore, it is recommended to develop lines of research, especially for future assessment regarding the training received by healthcare personnel in general and nursing personnel in particular, especially in terms of what is required to confront any pandemic, as well as the forms of psychological care that are applied in the institutions where they work and that deal with the forms of violence and discrimination to which they are exposed.

Conclusions

The occupational safety of healthcare personnel was fundamentally affected by the insufficient supply of PPE, which led to an increase in infections. The feeling of insecurity, along with excessive working hours, led to psychological effects. There was a deficiency related to training, especially in the handling of PPE and other biosecurity measures. The labor and social security rights of healthcare personnel were violated and, in some cases, the legislation is not complete. There was a neglect of the working conditions and rights of healthcare personnel by the State and by the institutions, in addition to the insufficient resources that exist in the poor economies of Latin America.

Conflict of interests

The authors stated that there was no conflict of interests.

Funding

The authors stated that there was no funding of any nature.

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How to cite this article: Saltos-Llerena I. Condiciones de trabajo del personal de salud que enfrenta la pandemia en Latinoamérica: revisión integrativa. SANUS [Internet]. 2022 [citado dd mm aa];7:e311. Available at: URL/DOI