Factors associated with complications from COVID-19 in hospital workers: A retrospective cohort study

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Abstract

Introduction

SARS-CoV-2 infection in healthcare professionals represents a threat to the healthcare system.

Objectives

To identify factors associated with complications from COVID-19 in healthcare workers infected by SARS-CoV-2 in a specialized national hospital level III in Peru in 2020.

Methods

This is a retrospective cohort study. Health personnel who were working at Instituto Nacional Materno Perinatal of Peru participated. The clinical and epidemiological characteristics and results of the Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) test were collected from the medical records and epidemiological files. Simple and multiple regression models were used to estimate the risk factors of complications due to COVID-19.

Results

We found 1048 suspected cases, and 26.2% had a confirmed SARS-CoV-2 infection. Of those infected, 20.8% had comorbidity, and 55% reported contact with COVID-19 patients in health care settings. Moreover, 27.4% of infected workers were administrative personnel, 24.1% were nursing technicians, 18.3% were nurses, and 13.1% were physicians. We also found that 24.1% presented complications from COVID-19, and three workers died. In a multiple regression, the risk factors for complications due to COVID-19 were the presence of comorbidity (risk ratio: 2.94; 95% confidence interval: 1.95 to 4.42), 30 years or older (1.28; 0.6 to 2.75), 60 years or older (2.04; 0.88 to 4.74), male sex (1.1; 0.71 to 1.7) and care work area (1.02; 0.06 to 2.62).

Conclusions

The findings in the present study show an association between the presence of comorbidities and an increased risk of presenting complications due to COVID-19 in healthcare workers.

Main messages

- SARS-CoV-2 infection in workers represents a threat to the health system.
- This study's results will help identify vulnerable personnel to prevent severe forms of the disease by taking the corresponding isolation measures.
- Some of the limitations of this work are the collection of information from medical records, not having direct contact with the patient or access to the viral load for its association with the complications analyzed in this study.

Introduction

The COVID-19 disease became an occupational disease of healthcare workers [1] due to the increased risk of exposure to SARS-CoV-2 in healthcare facilities [2,3] compared to the general population [4].

In the Americas region, an accelerated increase of infections and deaths due to COVID-19 in health personnel was found in 2020 [4]. In Peru, 61 808 confirmed cases had been reported among health care personnel, with a mortality rate of 2% [5]. The COVID-19 pandemic is a global health emergency, and the capacity to respond to this crisis consists mainly of ensuring the continuous provision of health services [2]. Health personnel is fundamental to its functioning [4]. Consequently, SARS-CoV-2 infection in workers represents a threat to the health system [6].

Like in the general population, COVID-19 infection in healthcare workers can be asymptomatic or oligosymptomatic, and its complications occur in a low percentage of cases [7]. For this reason, early diagnosis, identification of complications, and appropriate management are essential to decrease COVID-19 mortality [8].

This study aimed to identify factors associated with complications due to COVID-19 in healthcare personnel with a real-time polymerase chain reaction test (RT-PCR) who worked in a third-level care institute in Peru in 2020.

Methods

Study design and setting

This is a retrospective cohort study conducted at a tertiary care hospital of the Ministry of Health of Peru named Instituto Nacional Materno Perinatal. In the context of the pandemic, the Instituto Nacional Materno Perinatal performed a real-time polymerase chain reaction test (RT-PCR) for SARS-CoV-2 on all workers with clinical suspicion and epidemiological contact. In addition, institutional protocols were followed to reduce the risk of transmission by implementing differentiated areas for the care of patients with COVID-19 disease.

The target population was healthcare personnel with COVID-19 infection confirmed by a positive RT-PCR test for SARS-CoV-2 that worked at the Instituto Nacional Materno Perinatal between April 1 and December 31, 2020.

Inclusion criteria for this study were:

a) Personnel with face-to-face or hybrid (face-to-face and remote) work.
b) Personnel with a positive result in the RT-PCR test for SARS-CoV-2.

Exclusion criteria were:

a) Health personnel who only performed remote work.
b) Personnel who only had clinical and/or radiological criteria suggestive of COVID-19.
c) Personnel who only had a rapid reactive IgM/IgG antibody detection test.

SARS-CoV-2 screening test

Workers presenting compatible symptoms and/or direct contact with a suspected or confirmed case of COVID-19 went to the personnel physician's office. Once the suspected case was identified, the clinical and epidemiological investigation form approved by the Ministry of Health was filled out, and an RT-PCR sample was taken.

Biological samples from health personnel were obtained from pharyngeal and nasal swabs by qualified personnel from the Epidemiology and Environmental Health area of the Instituto Nacional Materno Perinatal. The RT-PCR diagnostic test was used to process the biological samples at the National Institute of Health of Peru to identify the SARS-CoV-2 virus.

Variables

General information of the health personnel was recorded and included age (classified as young, adults, or older adults if workers had between 20 and 29, 30 and 59, and 60 or more years, respectively), sex, professional profile, and work area (administrative and health care). Moreover, we gathered the presence of any symptoms (sore throat, general malaise, fever, cough, headache, nasal congestion, muscle pain, respiratory distress, anosmia and ageusia, diarrhea, chest pain, joint pain, nausea and vomiting, and abdominal pain), and the presence of any comorbidity (arterial hypertension, type 2 diabetes mellitus, bronchial asthma, cardiovascular disease, cancer, rheumatoid arthritis,

and HIV). History of travel in the previous 14 days, contact with a suspected case (contact with a person with acute respiratory infection in the 14 days prior to symptom onset), or confirmed case (contact with a person with confirmatory evidence in the 14 days prior to symptom onset) of COVID-19 were also gathered.

The outcome variable was the presence of COVID-19 complications, defined as presenting acute respiratory infection, dyspnea (oxygen saturation less than or equal to 92%), tachypnea, and clinical or radiological signs of pneumonia. In addition, workers requiring hospitalization (including the intensive care unit) and those who died due to COVID-19 were also considered.

Collection of information

Characteristics of the health personnel and the results of the RT-PCR test were obtained by reviewing the medical records of the COVID-19 cases and clinical and epidemiological files approved by the Ministry of Health. The necessary safeguards were taken to guarantee the anonymity of the participants by coding their identity when collecting data from the information sources.

Statistical analysis

Relative and absolute frequencies were used to describe qualitative variables. The Chi-square test was used for the comparative analysis of variables between groups according to the presence of complications. The relative risk with their respective 95% confidence intervals was used for the bivariate analysis of the strength of association. Poisson regression with robust variance was used to identify the adjusted relative risk. The model adjustment considered an epidemiological approach, including sex, age, work area, and comorbidity as the main exposure variables and complications due to COVID-19 as the outcome variable. The analyses were performed using Rstudio software version 4.1.1.

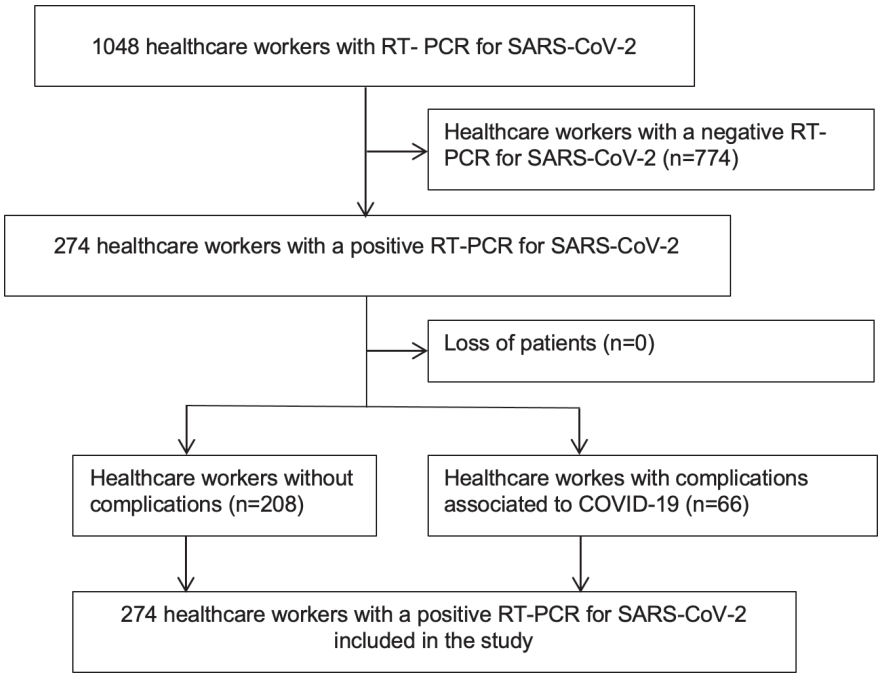
Ethics

The research was approved by the institutional Research Ethics Committee of the Instituto Nacional Materno Perinatal and had the corresponding institutional permission. The identity of the participants was protected at all times using alphanumeric coding. Likewise, Council for International Organizations of Medical Sciences (CIOMS) guidelines were followed for recording and handling the study participants' data.

Results

During the study period, 2228 workers were employed at the hospital, and a total of 1048 suspected cases were identified and tested by RT-PCR. Of these, 274 presented a positive result, and 774 had a negative result (Figure 1). A frequency of infection of 26.2% (95% confidence interval: 23.5 to 28.9%) was observed among the suspected cases of COVID-19 in health workers at the Instituto Nacional Materno Perinatal.

Figure 1. Flowchart for the selection of health personnel included in the study.



Source: Prepared by the authors.

The first six cases of healthcare personnel with COVID-19 infection were diagnosed in April 2020. In May and June, the number of confirmed cases at the Instituto Nacional Materno Perinatal increased, with 50 and 46 cases, respectively. In July, the highest number of cases was reported, with 77 new cases. During the following months, we saw a decrease in cases, with 50 in August, 18 cases in September, 11 cases in October, and one case in November. In December, there was a new increase in the number of new cases, reaching 15 infected workers in that month.

The most frequent characteristics of health personnel with a positive RT-PCR test were adult age (78.1%), female sex (72.6%), and contact with a person suspected of COVID-19 within the in-hospital setting (40.2%). Fifty-five percent of the infected healthcare personnel worked with patients with COVID-19. Of the infected, 72.3% worked in health care and 27.7% in administrative areas. Among those infected with COVID-19, administrative personnel accounted for 27.4%, nursing technicians 24.1%, nursing graduates 18.3%, and physicians 13.1%. Only 1.5% reported a history of travel 14 days before the onset of symptoms, and all were within the national territory (Table 1).

Among personnel with a positive RT-PCR test, 20.8% (57 cases) had some comorbidity. The most frequent were bronchial asthma in 26 cases (45.6%), arterial hypertension in 23 cases (40.4%), type 2 diabetes mellitus in eight cases (14%), cardiovascular disease in five cases (8.8%), cancer in two cases (3.5%), rheumatoid arthritis in two cases (3.5%) and one case of HIV (1.8%).

Symptoms were present in 95.3% of the personnel with a positive RT-PCR test. The time from symptom onset to sampling for the RT-PCR test had a median of three days (range: 1 to 20 days). The most frequent symptoms were general malaise (66.1%), sore throat (64.2%), fever (64.6%), cough (58%), and headache (51.5%). Other symptoms found were nasal congestion (43.8%), muscle pain (40.1%), respiratory distress (27.7%), anosmia or ageusia (15.7%). With lower frequency, we found symptoms such as diarrhea (12.8%), chest pain (11.3%), joint pain (9.1%), nausea and vomiting (6.2%), and abdominal pain (4%). A total of 24.1% presented some complication associated with COVID-19 (oxygen saturation less than or equal to 92%, clinical and/or radiological signs of pneumonia, or hospital admission), and three died (1.1%) (Table 2).

In the bivariate analysis, the characteristics associated with COVID-19 complications were the presence of comorbidities ($p < 0.001$), age ($p = 0.01$) and out-of-hospital contact ($p = 0.045$). No association was found between COVID-19 associated complications and sex ($p = 0.54$), work area ($p = 0.68$) and in-hospital contact ($p = 0.595$) (Table 3).

In bivariate analysis, the crude relative risk for COVID-19 complications in older adults compared to younger adults was 2.97 (95% confidence interval: 1.21 to 7.30). The crude relative risk for COVID-19 complications in health personnel with comorbidity compared to those without comorbidity was 3.17 (2.15 to 4.67). In the multiple regression analysis, the relative risk of presenting COVID-19 complications in health personnel with comorbidity was 2.94 (1.95 to 4.42) compared to health personnel without comorbidities, adjusted by sex, age, and work area (Table 4).

Discussion

The study showed that 26.2% of workers at the Instituto Nacional Materno Perinatal with suspected SARS-CoV-2 infection had confirmed infection by RT-PCR. We also found that 78.1% presented an age between 30 and 59 years, 20.8% had some comorbidity, and 55% cared for patients with COVID-19. A total of 31.8% worked in hospitalization areas, while 27.7% worked in administrative areas. Of these, 24.1% presented complications due to COVID-19, and three workers died. There was evidence of an association between having some comorbidity and complications due to COVID-19.

The frequency of infection among the workers of the Instituto Nacional Materno Perinatal aligns with other studies in public hospitals in Madrid, Spain [9] and Wuhan, China [10]. These findings also align at a regional level, where similar rates were reported among health personnel in Brazil [4]. In the context of the pandemic, the Instituto Nacional Materno Perinatal established a plan for the surveillance, prevention, and control of COVID-19 at work, following the Ministry of Health guidelines that have been in force since April 28, 2020, and its subsequent modifications [11,12]. In this regard, measures were implemented to identify suspected cases in workers, such as RT-PCR testing for SARS-CoV-2. These measures included the internal spreading of awareness-raising for the prevention of in-hospital infections, emphasizing the importance of hand washing, the mandatory use of masks, social distancing, and early reporting of COVID-19 symptoms. These measures were supervised by the respective service, department, and area managers. In addition, there was strict supervision by the Office of Epidemiology and Environmental Health of the Instituto Nacional Materno Perinatal.

It was evident that the number of confirmed cases at the Instituto Nacional Materno Perinatal followed the trend of the COVID-19 wave at a national level [5,13]. Many of the infections in health personnel occurred in our country's early pandemic stages. It was observed that a similar proportion of infected workers confirmed contact both within and outside the hospital. This suggests considering the risk of personnel exposure in other environments outside the institution. For this reason, the exposure of health personnel cannot be attributed to the work area alone, which limits the possibility of evaluating the impact of nosocomial versus community-acquired infection.

The study reported 12.2% of COVID-19 infections in healthcare workers at the Instituto Nacional Materno Perinatal for the study period, in contrast to other studies where they represent approximately 1% [10,14,15], which can be explained by the

Table 1. Characteristics of health personnel with COVID-19, INMP– 2020.

Characteristics	N = 274	%
Age groups		
Young (20 to 29 years)	32	11.7
Adult (30 to 59 years)	214	78.1
Older adult (60 years or more)	28	10.2
Sex		
Female	199	72.6
Male	75	27.4
Travel history		
No	270	98.5
Yes	4	1.5
In-hospital contact		
Suspected	110	40.2
Confirmed	70	25.5
Unknown	94	34.3
Out-of-hospital contact		
Suspected	33	12.0
Confirmed	68	24.8
Unknown	173	63.2
COVID-19 patient care		
Yes	151	55.1
No	123	44.9
Work areas		
Administrative	76	27.7
Outpatient care	12	4.4
Emergency	14	5.1
Inhospital care	87	31.8
Intensive care unit	27	9.9
Operations room	18	6.6
Other areas	40	14.5
Profession		
Administrative	75	27.4
Technical nurse	66	24.1
Nurse	50	18.3
Physician	36	13.1
Assistance technician	20	7.3
Obstetrician	16	5.8
Pharmacist	3	1.1
Psychologist	2	0.7
Biologist	2	0.7
Social worker	2	0.7
Dentist	2	0.7

INMP: Instituto Nacional Materno Perinatal.
Source: Prepared by the authors of this study.

different criteria considered to perform an RT-PCR test. Other studies only apply swab sampling to symptomatic patients, while our institution also included workers who reported direct contact with a suspected or confirmed case of COVID-19. The predominantly affected population were female adults between 30 and 59 years of age, which is compatible with the majority of sociodemographic findings in health personnel in different parts of the world [10,14–18] since most of the personnel working in the institution fall within this demographic profile.

Workers in hospitalization areas and those who provided care to COVID-19 patients represent the majority of infected personnel, consistent with other reports indicating that more than half of the affected personnel work in the direct care of patients with COVID-19 [10,16]. Although cross-infection in

Table 2. Description of symptoms, comorbidities, and deaths in health personnel with COVID-19, INMP – 2020.

Variables	N = 274	% (95% CI)
Presence of symptoms		
Yes	261	95.3 (91.9 to 97.2)
No	13	4.7 (2.8 to 9.7)
Presence of comorbidities		
Yes	57	20.8 (16.4 to 26.0)
No	217	79.2 (74.0 to 83.6)
COVID -19 complications		
Yes	66	24.09 (19.4 to 29.5)
No	208	75.91 (70.5 to 80.6)
Deceased		
Yes	3	1.1 (0.4 to 3.4)
No	271	98.9 (96.6 to 99.6)

CI: confidence interval. INMP: Instituto Nacional Materno Perinatal.
Notes: Source: Prepared by the authors of this study.

the same institution cannot be excluded, it is unlikely that this situation explains most of them.

Among care staff, the most affected were nursing technicians, followed by nursing graduates and physicians. In contrast, multiple studies point to nurses as the most affected occupational group [10,17,18]. Other authors also highlighted high rates of infected support staff [4,14,19]. This situation may be explained by the greater amount of time they devote to direct patient care. However, administrative staff accounted for the highest number of COVID-19 infections among healthcare workers. This proportion may be attributable to different reasons, such as community infection or air recirculation in enclosed spaces. Likewise, the healthcare personnel's compliance with biosafety measures is higher due to the high risk of exposure in patient care. Administrative personnel maintains constant contact so that someone with SARS-CoV-2 infection who worked at their

Table 3. Comparison of health personnel factors according to COVID-19 complications, INMP – 2020.

Factors	Without complications associated with COVID-19		With complications associated with COVID-19		p
	n = 208	%	n = 66	%	
Sex					0.54
Female	153	73.56	46	69.70	
Male	55	26.44	20	30.30	
Age groups					0.01
Young (20 to 29 years)	27	12.98	5	7.58	
Adults (30 to 59 years)	166	79.81	48	72.73	
Older adults (60 years or more)	15	7.21	13	19.70	
Comorbidities					< 0.001
No	181	87.02	36	54.55	
Yes	27	12.98	30	45.45	
Work area					0.68
Care area	59	28.37	17	25.76	
Administrative	149	71.63	49	74.24	
In-hospital contact					0.595
Suspected	85	40.87	25	37.88	
Confirmed	50	24.04	20	30.30	
Unknown	73	35.10	21	31.82	
Out-of-hospital contact					0.045
Suspected	30	14.42	3	4.55	
Confirmed	54	25.96	14	21.21	
Unknown	124	59.62	49	74.24	

INMP: Instituto Nacional Materno Perinatal.
Source: Prepared by the authors of this study.

Table 4. Relative risk factors associated with COVID-19 complications in healthcare personnel through bivariate, and multiple regression analysis**,** INMP – 2020.

Factors	Crude RR (95% CI)	Adjusted RR[a] (95% CI)
Sex		
Female[b]		
Male	1.15 (0.73 to 1.81)	1.1 (0.71 to 1.7)
Age groups		
Young (20 to 29 years)[b]		
Adult (30 to 59 years)	1.43 (0.62 to 3.34)	1.28 (0.6 to 2.75)
Older adults (60 or more)	2.97 (1.21 to 7.30)	2.04 (0.88 to 4.74)
Comorbidities		
No[b]		
Yes	3.17 (2.15 to 4.67)	2.94 (1.95 to 4.42)
Work area		
Administrative area[b]		
Care area	1.11 (0.68 to 1.79)	1.02 (0.06 to 2.62)

CI: confidence interval.RR: relative risk.
[a]Adjusted RR: relative risk by Poisson multiple regression with robust variance, adjusted for sex, age groups, and work area.[b]Reference characteristics in the comparison.
Source: Prepared by the authors of this study.

site 48 hours prior to the onset of symptoms could have been a source of infection for others [20]. Thus, the difference found has necessary implications for reformulating policies to reduce this infection among workers.

In the present study, we found that 4.7% of healthcare personnel with SARS-CoV-2 infection were asymptomatic. The existence of these patients puts the health of the rest of the staff at risk, so it is vital to identify and isolate them to prevent disease spread. To a large extent, COVID-19 infection in healthcare personnel was oligosymptomatic. Like most international papers reported, the main symptoms found were general malaise, sore throat, fever, and cough [10,14,16,16,19,21]. Although anosmia and ageusia were considered specific symptoms, these were reported only in 15.7% of workers. The time from symptom onset to treatment initiation was three days, which is shorter than the general population [21]. This is similar to publications reporting the prioritization of health personnel for testing compared to the general public [22].

On the other hand, 57 healthcare workers with COVID-19 had some comorbidity. Multiple studies indicated that the most frequent comorbidities were arterial hypertension, chronic obstructive pulmonary disease, type 2 diabetes mellitus, and other cardiovascular diseases [10,17,19,22]. Likewise, our findings showed that a quarter of the workers developed complications due to COVID-19. These complications manifested as oxygen saturation less than or equal to 92%, tachypnea, and clinical and/or radiological signs compatible with pneumonia. Other studies also report similar findings [10], but there are no precise data on this situation for health personnel in our country.

Under a bivariate analysis, COVID-19 complications were associated with the presence of comorbidities and being 60 years of age or older. Likewise, adjusting for age, sex, and work area, the relative risk of presenting complications associated with COVID-19 in health personnel with comorbidity was 2.94 times compared to personnel without comorbidities. These findings differ from other studies where no such association was found in health personnel [10,17].

The Center for Disease Control and Prevention notes that most of the deaths registered in health personnel in the United States had some comorbidity [19]. The Ministry of Health also identifies certain conditions that determine a higher risk of dying from COVID-19, where an age over 65 years stands out [21]. Three workers at the Instituto Nacional Materno Perinatal died from complications of this disease. The three deceased were 65 years or more, while only one of them was a healthcare worker. Other studies have shown that the case fatality rate is lower in this occupational group [10,23] compared to 4% in the general population [21]. Although severe forms of COVID-19 disease do not represent the majority of cases, our study showed that more than half of all infected workers with some comorbidity developed complications due to COVID-19.

These findings emphasize the risk of complications in those with some comorbidity, so it is crucial to assess the worker's health status to determine the modality of work of personnel in vulnerable situations and maintain permanent surveillance of the worker's health in the context of COVID-19 [11].

The limitations of this study include that workers' information was collected from records and not from direct contact (including medical records and a report of confirmation of COVID-19 infection) and not having access to the viral load for its association with the complications analyzed in this study.

Conclusions

We found a significant association between the presence of comorbidities and having SARS-CoV-2 complications. The most frequently reported comorbidities were bronchial asthma, arterial hypertension, and type 2 diabetes mellitus.

The Instituto Nacional Materno Perinatal was not exempt from caring for COVID-19 patients or COVID-19 infection in health personnel. For this reason, the strategy should focus on reducing SARS-CoV-2 transmission in the hospital setting.

Our study recommends improving awareness and response capacity to reduce the impact of morbidity and mortality in healthcare personnel in the face of a possible new COVID-19 pandemic wave. To this end, the identification of comorbidities in workers is relevant. Likewise, it is necessary to reinforce training and awareness regarding strict compliance with biosecurity measures and individual supervision.

Notes

Contributor roles

LPC: conceptualization, methodology, research, validation, writing - first draft, writing - revision and editing, visualization, supervision. CDA: conceptualization, methodology, validation, writing - first draft, writing - review and editing, visualization, supervision. MES: conceptualization, methodology, formal analysis, validation, writing - review and edit, visualization, supervision.

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Competing interests

The authors completed the ICMJE conflict of interest declaration form and declared that they did not receive funds for this article; they have no financial relationships with organizations that may have an interest in the article published in the last three years and have no other relationships or activities that may influence the publication of the article.

Ethics

The study was conducted following the International Ethical Guidelines for Health-Related Research Involving Human Subjects, Fourth Edition. Geneva: Council for International Organizations of Medical Sciences (CIOMS); 2016. The study protocol was approved by the Institutional Ethics Committee of the Instituto Nacional Materno Perinatal of Peru. The protocol obtained permission for the information generation under conditions of the current COVID-19 pandemic and the absence of associated risks for patients. Data confidentiality was safeguarded through a process of alphanumeric identity coding.

Data sharing statement

The data used for the present study are available upon request.

Provenance and peer review

Not commissioned. Reviewed externally by four double-blind peer reviewers and five rounds of review. One review was statistical and methodological.

Language of submission

Spanish.

References

1. Ley que incorpora a la enfermedad causada por el COVID-19 dentro del listado de enfermedades profesionales de los servidores de la salud. Ley No.31025. Diario El Peruano; 2020. https://busquedas.elperuano.pe/normaslegales/ley-que-incorpora-a-la-enfermedad-causada-por-el-covid-19-de-ley-n-31025-1868269-1/
2. International Labour Organization. COVID-19 and the health sector. 11 Apr 2020. https://www.ilo.org/sector/Resources/publications/WCMS_741655/lang--en/index.htm
3. Galan E, Tarazona A, Palacios M. Risk and death of doctors 100 days after the state of emergency by COVID-19 in Peru. Acta Med Peru. 2020;37: 119–21. https://doi.org/10.35663/amp.2020.372.1033
4. Pan American Health Organization / World Health Organization. Epidemiological Alert: COVID-19 among health workers. PAHO/OMS; 2020. https://www.paho.org/en/documents/epidemiological-alert-covid-19-among-health-workers-31-august-2020
5. Ministerio de Salud. Sala situacional virtual de COVID-19 en el sector salud. https://www.dge.gob.pe/dashpersonalsalud/#grafico11/
6. Maguiña C. Reflections on COVID-19 infection, Colegio Medico del Peru and the public health. Acta Med Peru. 2020;37: 8–10. https://doi.org/10.35663/amp.2020.371.929
7. Gómez-Ochoa SA, Franco OH, Rojas LZ, Raguindin PF, Roa-Díaz ZM, Wyssmann BM, et al. COVID-19 in Health-Care Workers: A Living Systematic Review and Meta-Analysis of Prevalence, Risk Factors, Clinical Characteristics, and Outcomes. Am J Epidemiol. 2021;190: 161–175. https://doi.org/10.1093/aje/kwaa191
8. Taype A, Hurtado Y, Estrada M, Timaná R. Clinical recommendations for evaluation and risk management of COVID-19 in healthcare personnel in the Peruvian social insurance (EsSalud). Acta Med Peru. 2020;37: 84–7. https://doi.org/10.35663/amp.2020.371.953
9. Folgueira MD, Muñoz-Ruipérez C, Alonso-López MÁ, Delgado R. SARS-CoV-2 infection in Health Care Workers in a large public hospital in Madrid, Spain, during March 2020. Infectious Diseases (except HIV/AIDS). 2020. https://doi.org/10.1101/2020.04.07.20055723
10. Lai X, Wang M, Qin C, Tan L, Ran L, Chen D, et al. Coronavirus Disease 2019 (COVID-2019) Infection Among Health Care Workers and Implications for Prevention Measures in a Tertiary Hospital in Wuhan, China. JAMA Netw Open. 2020;3. https://doi.org/10.1001/jamanetworkopen.2020.9666

11. Ministerio de Salud. Lineamientos para la vigilancia de la salud de los trabajadores con riesgo de exposición a COVID-19. https://cdn.www.gob.pe/uploads/document/file/1008153/RM_448-2020-MINSA.pdf
12. Ministerio de Salud. Lineamientos para la vigilancia de la salud de los trabajadores con riesgo de exposición a COVID-19. https://www.gob.pe/institucion/minsa/normas-legales/542920-239-2020-minsa
13. Ministerio de Salud. Sala situacional COVID-19. https://covid19.minsa.gob.pe/sala_situacional.asp
14. Kluytmans-van den Bergh MFQ, Buiting AGM, Pas SD, Bentvelsen RG, van den Bijllaardt W, van Oudheusden AJG, et al. Prevalence and Clinical Presentation of Health Care Workers With Symptoms of Coronavirus Disease 2019 in 2 Dutch Hospitals During an Early Phase of the Pandemic. JAMA Netw Open. 2020;3. https://doi.org/10.1001/jamanetworkopen.2020.9673
15. Sikkema RS, Pas SD, Nieuwenhuijse DF, O'Toole Á, Verweij J, van der Linden A, et al. COVID-19 in health-care workers in three hospitals in the south of the Netherlands: a cross-sectional study. Lancet Infect Dis. 2020;20: 1273–1280. https://doi.org/10.1016/S1473-3099(20)30527-2
16. Mani NS, Budak JZ, Lan KF, Bryson-Cahn C, Zelikoff A, Barker GEC, et al. Prevalence of Coronavirus Disease 2019 Infection and Outcomes Among Symptomatic Healthcare Workers in Seattle, Washington. Clin Infect Dis. 2020;71: 2702–2707. https://doi.org/10.1093/cid/ciaa761
17. Drobnik J, Susło R, Pobrotyn P, Fabich E, Magiera V, Diakowska D, et al. COVID-19 among Healthcare Workers in the University Clinical Hospital in Wroclaw, Poland. Int J Environ Res Public Health. 2021;18: 11. https://doi.org/10.3390/ijerph18115600
18. Magnavita N, Tripepi G, Di Prinzio RR. Symptoms in Health Care Workers during the COVID-19 Epidemic. A Cross-Sectional Survey. Int J Environ Res Public Health. 2020;17: 14. https://doi.org/10.3390/ijerph17145218
19. CDC COVID-19 Response Team. Characteristics of Health Care Personnel with COVID-19 - United States, 2020. MMWR Morb Mortal Wkly Rep. 2020;69: 477–481. https://doi.org/10.15585/mmwr.mm6915e6
20. CDC. Prioritizing non-healthcare worksite assessments for Coronavirus Disease 2019. https://www.cdc.gov/coronavirus/2019-ncov/php/community-mitigation/prioritizing-non-healthcare-assessments.html#prin
21. Ministerio de Salud. Boletín Epidemiológico del Perú. Centro Nacional de Epidemiología, Prevención y Control de Enfermedades. 2020;29: 467–469. https://www.dge.gob.pe/epipublic/uploads/boletin/boletin_202044.pdf
22. Nguyen LH, Drew DA, Graham MS, Joshi AD, Guo C-G, Ma W, et al. Risk of COVID-19 among front-line health-care workers and the general community: a prospective cohort study. Lancet Public Health. 2020;5: e475–e483. https://doi.org/10.1016/S2468-2667(20)30164-X
23. Hughes MM, Groenewold MR, Lessem SE, Xu K, Ussery EN, Wiegand RE, et al. Update: Characteristics of Health Care Personnel with COVID-19 - United States, February 12-July 16, 2020. MMWR Morb Mortal Wkly Rep. 2020;69: 1364–1368. https://doi.org/10.15585/mmwr.mm6938a3

Factores asociados a complicaciones por COVID-19 en trabajadores hospitalarios: estudio de cohorte retrospectivo

Resumen

Introducción

La infección por SARS-CoV-2 en profesionales sanitarios representa una amenaza para el sistema de salud.

Objetivos

Identificar factores asociados a complicaciones por COVID-19 en trabajadores sanitarios, infectados por SARS-CoV-2 y que pertenecen a un hospital nacional especializado de tercer nivel de Perú en el año 2020.

Métodos

Estudio de cohorte retrospectivo. Participaron trabajadores sanitarios infectados por SARS-CoV-2, que trabajaron en el Instituto Nacional Materno Perinatal entre abril y diciembre de 2020. Se recogieron características clínicas y epidemiológicas, más resultados de la prueba de reacción en cadena de la polimerasa con transcriptasa inversa (PCR-TR) a partir de historias clínicas y fichas clínico epidemiológicas. Se utilizó regresión simple y múltiple para estimar los riesgos relativos de complicaciones por COVID-19.

Resultados

Se identificaron 1048 casos sospechosos, de ellos 26,2% tuvo infección confirmada de SARS-CoV-2. Del personal sanitario infectado, el 20,8% tuvo alguna comorbilidad, 55% manifestó atención a pacientes COVID-19, 27,4% fue personal administrativo, 24,1% técnico en enfermería, 18,3% licenciada de enfermería y 13,1% personal médico. El 24,1% presentó complicaciones por COVID-19 y tres trabajadores sanitarios fallecieron. En regresión múltiple, se obtuvo riesgos relativos para complicaciones por COVID-19 según presencia de comorbilidad (riesgo relativo: 2,94; intervalo de confianza 95%: 1,95 a 4,42), edad de 30 años a más (1,28; 95%: 0,6 a 2,75), 60 años a más (2,04; 95%: 0,88 a 4,74), sexo masculino (1,1; 95%: 0,71 a 1,7) y área laboral asistencial (1,02; 95%: 0,06 a 2,62).

Conclusiones

Los hallazgos sugieren que en trabajadores sanitarios infectados por SARS-CoV-2, la presencia de comorbilidades está asociada a complicaciones por COVID-19, independientemente de la edad, el sexo y del área laboral.