



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

Workplace Violence Against Physicians Treating COVID-19 Patients in Peru: A Cross-Sectional Study

Agueda Muñoz del Carpio-Toia, PhD; Lucía Begazo Muñoz del Carpio; Percy Mayta-Tristan; Dulce Esperanza Alarcón-Yaquetto; Germán Málaga, MD

Background: The COVID-19 pandemic is an unprecedented challenge to health systems that has revealed shortcomings and increased unmet demands. Such situations might exacerbate workplace violence (WPV) against physicians, as has been reported in several parts of the world.

Methods: To identify the frequency and characteristics of WPV suffered by physicians attending COVID-19 patients in Peru, a descriptive, cross-sectional study was conducted with an online survey of 200 physicians.

Results: Of the survey respondents, 84.5% had suffered some type of WPV; 97.6% of these suffered nonphysical violence. Suffering more than one incident of violence was reported by 75.7% of respondents. The primary aggressor was a patient's family member or caregiver. Violence occurred most frequently in critical areas inside the health service facility, such as COVID-19 triage, tents, and hospital units, although it also occurred during teleconsultations. Multiple shortcomings of the health services were perceived as the main trigger of violence. Being a female physician (odds ratio [OR] = 2.48, 95% confidence interval [CI] = 1.06–5.83) and working in a COVID-19 ICU (OR = 5.84, 95% CI = 1.60–21.28) were the main factors associated with WPV.

Conclusion: Violence against physicians attending COVID-19 patients in Peru is common. The perceived factors that contribute most to violence are linked to deficiencies in health services.

In December 2019 the first cases of an atypical pneumonia that triggered an acute respiratory syndrome were reported in Wuhan, China.¹ In January 2020 the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was officially identified as the responsible agent of the new coronavirus disease (COVID-19),^{2,3} and in March the infection was declared a pandemic.⁴

The SARS-CoV-2 pandemic is an unprecedented challenge that has led to the collapse of health systems, causing work overload from a sudden and exponential increase in the demand for health care. This is one of the main factors triggering violence from the population against health personnel, particularly physicians.⁵

The International Labour Organization (ILO) defines violence and harassment at work as “a range of unacceptable behaviours and practices, or threats thereof, whether a single occurrence or repeated, that aim at, result in, or are likely to result in physical, psychological, sexual or economic harm, and includes gender-based violence and harassment.”⁶ This includes verbal abuse such as threats and insults that affect a worker's health, productivity, and job satisfaction.⁷

There is evidence of workplace violence (WPV) against health care workers—mainly in hospitals⁸ but also in primary care health services.⁹ This is not an uncommon phenomenon, as shown by Liu et al.¹⁰ Violence against health

care workers is a complex problem, the motivations of which must be evaluated carefully. Some studies agree that the lack of punishment of the perpetrator and the lack of reporting procedures and policies are major factors.^{9,11} Overcrowding⁹ and lack of understanding between patients and health personnel^{12,13} have also been suggested as triggers.

In Peru, despite policies to identify, prevent, and control occupational risk factors,¹⁴ the high frequency of WPV against health care workers persists both in hospitals^{15–20} and primary care services.^{21,22} Morales et al. found an 11.1% prevalence of physical violence and a 35.7% prevalence of psychological violence in primary care workers,²² while another study found that 80% of the physicians interviewed had been victims of WPV throughout their working lives in primary care services.²¹

Violence against health personnel in times of health emergencies has also been documented.²³ The causes are diverse, and one of the suggested ways to take action is to document the event in order to design interventions when the scope of the problem has been determined. In the context of the current COVID-19 pandemic, violence against health care workers has been documented in India²⁴ and Pakistan,²⁵ as well as in more than 600 cases in several other parts of the world.²³

In Latin America the picture is not much different. Although there are no accurate data on the prevalence of violent episodes against health personnel, press reports indicate a resurgence as a consequence of the current pandemic.

This is particularly true in countries that have experienced periods of internal violence and political instability, such as Mexico and Colombia.²⁶ There have been reports of direct threats and discrimination against health personnel both inside and outside health facilities.^{26,27} Stigmatization and misinformation lead the public to see health care workers as a representation of the disease, and the fear of contagion materializes in both physical and nonphysical abuse.²⁸

Peru is one of the countries most affected by COVID-19 in terms of incidence and mortality rates.^{29,30} Its fragmented health system and serious funding problems³¹ might further exacerbate violent episodes against health care workers. Here, we sought to determine the frequency and characteristics of WPV against Peruvian physicians attending COVID-19 patients.

METHODS

Study Design and Setting

This is a descriptive, cross-sectional study, carried out between August and September of 2020. Inclusion criteria were (1) physicians or residents (physicians training to become specialists¹⁹) (2) attending COVID-19 patients in a COVID-19 category health facility in Peruvian territory and (3) willing to fill a self-administered online questionnaire. The participants were invited to participate by mail and WhatsApp and were provided with a link to the questionnaire.

The Peruvian health system is characterized by its fragmentation. Most health facilities are administered by the Ministry of Health (MINSA) and serve the neediest population. EsSalud is the social security service for salaried personnel and their families, financed by the Ministry of Labor; police and military health is administered by the Ministry of Defense, while private health facilities are financed by their users.³²

In Peru, after the outbreak, only hospitals with the infrastructure to provide adequate care were categorized as COVID-19 health facilities. In these hospitals, outpatient visits are suspended. Only emergency services and hospitalization (non-COVID areas) are available for non-COVID-19 patients. Some physicians work exclusively in COVID-19 areas and COVID-19-critical areas, while others (mainly residents) have COVID-19 and non-COVID-19 shifts. The participants in our study were all attending COVID-19 patients.

Ethical Considerations

All proceedings were approved by the Institutional Review Board of Universidad Católica de Santa María. All participants had to agree to participate through a virtual informed consent before accessing the questionnaire.

Workplace Violence Questionnaire

The questionnaire is an adapted version of the ILO questionnaire on WPV in the health sector.³³ This questionnaire has been used previously for studies conducted in Peru.^{16,20,21} Using Google Forms,³⁴ we adapted the tool to fit the context of the COVID-19 pandemic.

The questionnaire consisted of 28 items divided into three sections. The first section aimed to gather socioeconomic and occupational characteristics. Section 2 included questions regarding violence: the type and frequency; the work area where the violent episode took place; and who the perpetrator was, with the following options: patient, patient's family or caregiver, other health personnel, non-health personnel, other. To inquire about the most frequent type of violence in different hospital areas, options were presented according to areas available in Peruvian COVID-19 hospitals, such as tents, triage zones, hospitalization, ICU, attention modules, hospital corridors, and other services. Finally, this section included a question regarding whether the respondent thought WPV could have been prevented. The last section sought to evaluate factors associated with WPV and measures to prevent it. For this purpose, options extracted from previous studies were presented.¹⁶ The participant could decide whether they strongly agreed, agreed, disagreed, strongly disagreed, or were indifferent to the fact that the given factor was associated with WPV. A similar question with six options was presented for measures that were considered likely to prevent WPV. A complete version of the questionnaire used is provided as Appendix 1 (available in online article).

The request to participate came from the research team. To guarantee that only physicians working in a COVID-19 category hospital completed the questionnaire, we circumscribed the invitations to known professional networks not affiliated with any organization through a WhatsApp private group of physicians working in COVID-19 hospitals ($n = 203$) and by mail through physicians working as coordinators of COVID-19 areas ($n = 60$), but with no sanctioning capacity to avoid any feeling of coercion. The surveys were anonymized. We did not collect e-mail addresses, and the participants were notified of this prior to enrolling. We established a convenience sample of 200 respondents after previous studies with similar sample sizes.^{16,22} Questionnaires were available for answering until the sample was completed.

Statistical Analyses

Descriptive statistics are presented as counts and percentages for categorical variables and median and interquartile range for continuous variables. We grouped participants by whether or not they had experienced WPV during the pandemic and assessed differences in sociodemographic and occupational characteristics. Simple and multiple logistic regression was used to assess variables associated

with WPV. A multivariate regression model was fitted with variables that had a $p \leq 0.2$ in the univariate analysis, as has been performed elsewhere.³⁵ Crude and adjusted odds ratios and 95% confidence intervals are reported. Statistical significance was denoted by $p < 0.05$. Statistical analyses were performed with SPSS 23 (IBM Corp., Armonk, New York) and RStudio 1.3.1073 (RStudio, PBC, Boston).

RESULTS

Of 263 physicians invited to participate in the study, 200 (76.0%) participated. The average age of participants was 37.5 years (range: 25–47 years), and the majority worked in a Ministerio de Salud (MINSA)–administered hospital (54.5%) and had a medical specialty (63.0%). [Table 1](#) presents the participants' main sociodemographic and occupational characteristics.

In the context of the current pandemic, 84.5% of the physicians participating in our study had suffered some type of WPV while attending COVID-19 patients, of which 75.7% experienced more than one violent incident. All types of WPV were reported: 97.6% nonphysical violence, which included insults (3.6%), threats (4.1%), and other forms of verbal abuse (89.9%); sexual harassment, which accounted for three cases (1.8%); and one case of physical violence (0.6%). The aggressors were usually accompanying the patient—that is, a family member/caregiver—(43.0%). The place violence most frequently occurred was inside the health facility (88.2%). Interestingly, violence against physicians in remote work during teleconsultations was also reported (8.3%).

Results showed that verbal abuse was the most frequent type of violence experienced by COVID-19 physicians (55.8%), critical area residents (72.0%), and COVID-19 support physicians (40.0%). Furthermore, violence occurred most frequently in COVID-19 triage areas: 86.4% of respondents agreed WPV was very frequent or frequent here, followed by tents (72.2%), hospitalization areas (68.2%), modules (66.3%), and ICUs (52.1%). In [Table 2](#), we present the characteristics of WPV by type of violence experienced. The only physical violence episode was reported in the COVID-19 triage area, and the perpetrator was the patient's family member or caregiver. It should be noted that participants also reported violence by other health personnel and administrative or non-health staff. Violence by coworkers was mainly nonphysical, and some sexual harassment cases were reported.

Participants identified the following as possible factors associated with WPV against physicians in the COVID-19 pandemic: lack of medicines, human resources, ventilators, and medical equipment; patients in the severe phase of the disease; and infrastructure gaps ([Figure 1](#)).

Regarding the perception of violence, 7 out of 10 physicians perceive that WPV can be prevented, with solving

the patients' demands as the most agreed-upon measure to prevent WPV (95.5%). Recognition of WPV by health authorities (87.5%), dictating corrective measures and establishing procedures and places for complaints (85%), and increasing security (83%) were also among the preemptive measures that received the most positive responses.

Simple logistic regression shows that working in a COVID-19 area, particularly a COVID-19 ICU, increases the odds of suffering WPV (aOR= 5.33) ([Table 3](#)). This association persisted when adjusting the model by sex and years of experience. Furthermore, the multivariate regression model shows that being a female is associated with greater odds of WPV ([Table 3](#)).

DISCUSSION

This study sought to document the frequency and characteristics of WPV against physicians in Peruvian health services in the context of the COVID-19 pandemic. According to the results, 84.5% of the physicians interviewed had suffered violence while attending COVID-19 patients, with more than 75% suffering violence on multiple occasions. Most of the violence was nonphysical, with only one incident of physical violence reported.

The pandemic found the country in the midst of a health system reform characterized by fragmentation and underfunding, with households financing more than 50% of their health expenditure through out-of-pocket payments and severe deficits in infrastructure and equipment.^{36,37} Unfortunately, these characteristics are the norm rather than the exception in health systems of the Global South³⁸ and have clearly affected the response to the emergency.

The weakness of the health system is coupled with the excessive technological dependence of the region. Only 4% of needed medical supplies such as personal protective equipment and ventilators are sourced within Latin America, making the region highly vulnerable in circumstances of global high demand and low production capacity, such as that experienced early in the pandemic.³⁹ Lack of ventilators was perceived as one of the main triggers of WPV. In fact, a comparison between Latin American countries shows that Peru is the country with the lowest number of ventilators per 100,000 inhabitants (2.9 compared to Brazil's 31). A similar scenario is seen when analyzing number of ICU beds, number of specialists, and overall health expenditures.⁴⁰

Lack of oxygen is also perceived as an explanation for violence. In Peru, even high-complexity hospitals attending COVID-19 patients do not have proper oxygen infrastructure, and toward the exponential increased demand for oxygen hospital plants could only produce a fraction.^{41,42} Much of the oxygen had to be purchased by patients from private companies that increased its price considerably.⁴¹ As noted in other studies, increased out-of-pocket expenditure strains the relationship between patients and their

Table 1. Sociodemographic and Occupational Characteristics of Studied Sample*				
Variable	Total n (%)	Violence n (%)	No Violence n (%)	P Value
Age				
Median (IQR)	37.5 (31.5–47)	37 (31–47)	39 (33–48)	0.43
< 30	36 (18.0)	33 (91.7)	3 (8.3)	0.26
30–45	98 (49.0)	80 (81.6)	18 (18.4)	
> 45	66 (33.0)	56 (84.8)	10 (15.2)	
Sex				
Male	106 (53.0)	86 (81.1)	20 (18.9)	0.16
Female	94 (47.0)	83 (88.3)	11 (11.7)	
Marital status				
Married	89 (44.5)	72 (80.9)	17 (19.1)	0.65
Cohabiting	15 (7.5)	12 (80.0)	3 (20.0)	
Single	77 (38.5)	67 (87.0)	10 (13.0)	
Separated	11 (5.5)	10 (90.9)	1 (9.1)	
Divorced	6 (3.0)	6 (100)	0	
Widowed	2 (1.0)	2 (100)	0	
Whom do you live with?				
Moved to avoid spreading	23 (11.5)	20 (87.0)	3 (13.0)	0.64
No family	5 (2.5)	3 (60.0)	2 (40.0)	
Lives alone	23 (11.5)	20 (87.0)	3 (13.0)	
Lives with family	58 (29.0)	49 (84.5)	9 (15.5)	
Lives with part of family	91 (45.5)	77 (84.6)	14 (15.4)	
Dependent individuals				
None	18 (9.0)	18 (100)	0	0.15
1	95 (47.5)	76 (80.0)	19 (20.0)	
2–3	75 (37.5)	64 (85.3)	11 (14.7)	
> 4	12 (6.0)	1 (8.3)	11 (91.7)	
Occupational Characteristics				
Medical specialty				
Yes	126 (63.0)	104 (82.5)	22 (17.5)	0.60
No	34 (17.0)	30 (88.2)	4 (11.8)	
Residence	40 (20.0)	35 (87.5)	5 (12.5)	
Specialty				
Resident	40 (20.0)	35 (87.5)	5 (12.5)	0.45
General practitioner	34 (17.0)	29 (85.3)	5 (14.7)	
Internal physician	19 (9.5)	18 (94.7)	1 (5.3)	
Other specialties	107 (53.5)	87 (81.3)	20 (18.7)	
Years of experience				
Median (IQR)	10 (5–18)	10 (5–18)	10 (5–15)	0.57
≤5	60 (30.0)	52 (86.7)	8 (13.3)	0.65
6–10	48 (24.0)	38 (79.2)	10 (20.8)	
11–15	47 (23.5)	39 (83.0)	8 (17.0)	
≥16	45 (22.5)	40 (88.9)	5 (11.1)	
Months attending COVID-19 patients				
Median (IQR)	5 (4–5)	5 (4–5)	5 (4–5)	0.66
≤3	28 (14.1)	22 (78.6)	6 (21.4)	0.57
4–5	160 (80.8)	137 (85.6)	23 (14.4)	
> 5	10 (5.1)	9 (90.0)	1 (10.0)	
Place of work				
Primary care	30 (15.0)	26 (86.7)	4 (13.3)	0.52
MINSA hospital	109 (54.5)	94 (86.2)	15 (13.8)	
EsSalud hospital	48 (24.0)	40 (83.3)	8 (16.7)	
Private facility	8 (4.0)	6 (75.0)	2 (25.0)	
Other	5 (2.5)	3 (60.0)	2 (40.0)	

* Values are frequencies and percentage; chi-square test for categorical variables; Wilcoxon rank-sum test for continuous variables. IQR: Interquartile range; MINSA, Ministry of Health.

families with health personnel and might contribute to violence.^{43,44}

Reports of violence against physicians in Peru from before the pandemic range from 19.9%¹⁷ to 47%¹⁶ when analyzing violence suffered in the last 12 months. There-

fore, our results would show that violence against health care workers in the country has increased during the state of emergency.

As pointed out by Singh et al., WPV against health personnel might be a symptom of more profound problems in

	Type of Violence				
	Threats	Insults	Verbal Abuse	Physical Violence	Sexual Harassment
Area					
COVID-19 triage	10.1	16.2	69.8	0.9	2.0
Hospitalization	9.6	12.2	76.4	0	0.9
ICU	4.5	10.4	85.1	0	0
Hospital corridors	8.6	16.0	75.3	0	0
Tents	8.3	14.9	76.9	0	0
Modules	9.0	12.6	78.4	0	0
Other services	6.8	16.4	76.7	0	0
Outside health facility	3.9	9.6	86.5	0	0
Teleconsultation	11.4	6.8	81.8	0	0
Near home	0	30.1	69.2	0	0
Main perpetrator					
Patient's family/caregiver	33.7	28.4	39.7	0.6	4.7
Patient	3.5	7.7	11.2	0	1.2
Health personnel	0.6	0	2.9	0	3.6
Non-health personnel	6.0	1.2	8.9	0	1.8
Other	0	0	0	0	0.6

* Values are percentages.

Factor	cOR	95% CI	P	aOR	95% CI	P
Age						
< 30	1.96	0.51–7.65	0.331	–		
30–45	0.79	0.34–1.85	0.592	–		
> 45	1	0.34–1.85	0.592	–		
Sex						
Male	1		0.461	1		
Female	1.75	0.79–3.88	0.166	2.48	1.06–5.83	0.037
Work area						
COVID-19 area	3.36	1.09–10.33	0.035	3.67	1.15–11.78	0.029
ICU COVID-19	5.33	1.52–18.66	0.009	5.84	1.60–21.28	0.007
Non-COVID-19	1			1		
Years of experience						
≤5	1			1		
6–10	0.58	0.21–1.62	0.302	0.75	0.26–2.21	0.604
11–15	0.4	0.13–1.25	0.113	0.52	0.15–1.78	0.304
≥16	1.56	0.51–4.80	0.434	2.01	0.62–6.54	0.241
Specialty						
Resident	1.48	0.52–4.21	0.461	–		
No specialty	1.51	0.51–4.96	0.428	–		
With specialty	1			–		
Months working with COVID-19 patients						
≤3	1			–		
> 3	1.66	0.61–4.51	0.321	–		
Place of work						
Primary care	2.16	0.61–14.86	0.429	–		
MINSA hospital	2.09	0.39–11.33	0.393	–		
EsSalud hospital	1.67	0.28–9.80	0.572	–		
Other	0.5	0.04–5.51	0.571	–		
Private hospital	1			–		

CI, confidence interval; MINSA, Ministry of Health.

a health system, such as lack of human resources and unfit facilities, which are a hurdle to adequate and timely care.⁵ These demands need to be properly addressed to decrease violence, as participants in our study suggested.

Among the main variables associated with WPV, our results show that female physicians are at greater risk. Previous studies had also identified women as the main victims of WPV.^{45,46} The areas with the highest frequency

Is the following factor associated with WPV in the context of the COVID-19 pandemic?

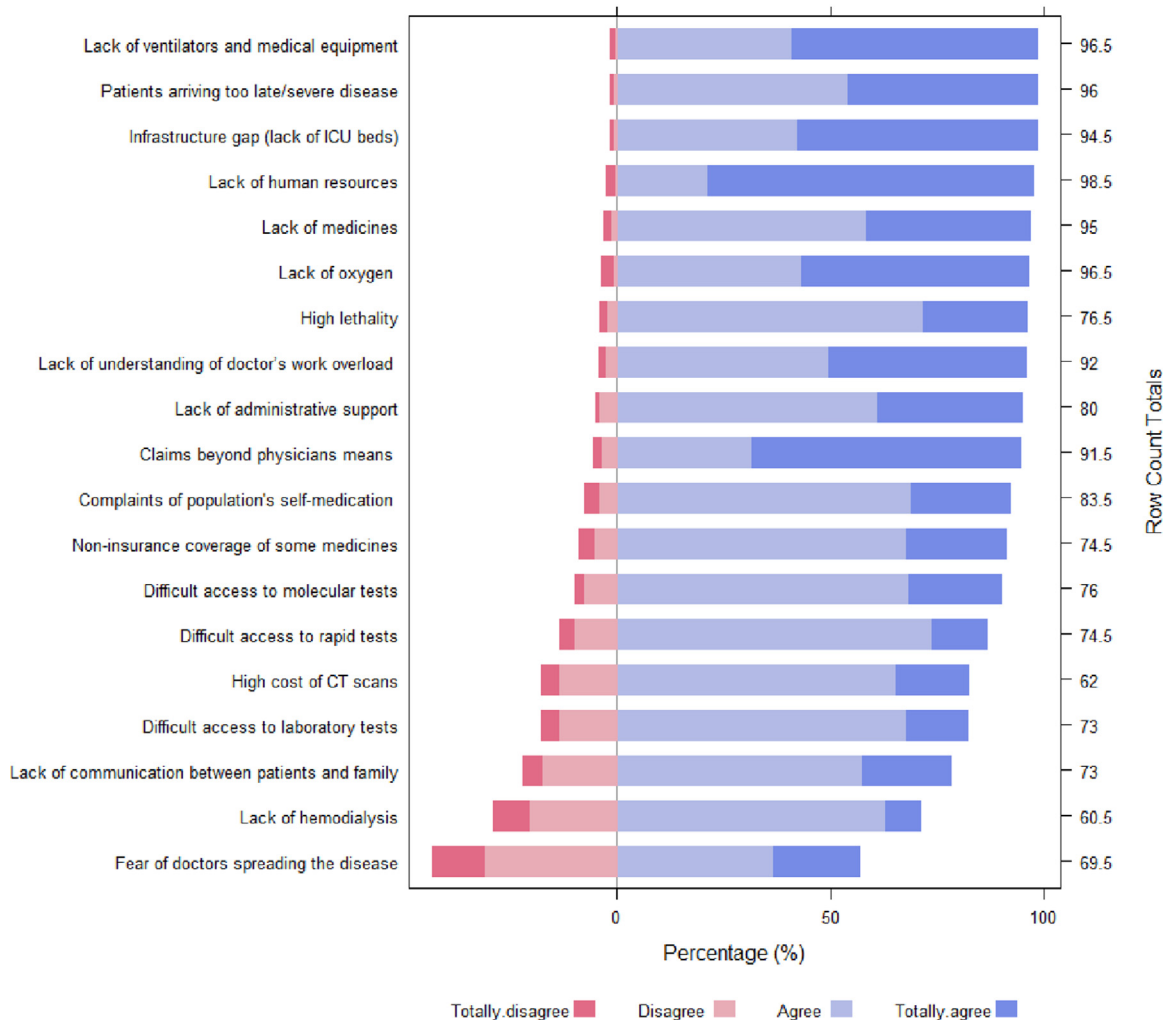


Figure 1: The questionnaire focused on factors associated with workplace violence (WPV) against physicians attending COVID-19 patients. Answers recorded as “indifferent” were excluded.

of violence against physicians are COVID-19 triage tents and hospitalization, which—given the health emergency—constitute critical areas. Furthermore, working in a COVID-19 ICU significantly increased the odds of suffering WPV compared to other areas. Sumari et al. had already identified that 100% of physicians working in emergency areas in a level III hospital in the Southern Region of Peru had reported being victims of violence or some type of aggression at some point in their working lives.⁴⁷ Likewise, Sun et al. determined that WPV more frequently affected physicians in emergency departments, ICUs, and psychiatric wards.⁴⁸ In this regard, Kumari argues that the greatest risk of aggression against physicians occurs in intensive care and emergency units due to the patient’s “additional cognitive load during stressed decision making.”⁴⁹(p. 152) In precarious contexts such as a pandemic, in which patients,⁵⁰ as well as family members and friends of patients,⁵¹ have high levels of anxiety and

psychological distress, levels of violence are expected to increase.

Due to the pandemic, a large number of physicians are working remotely through phone calls or video calls because they have some risk factor that predisposes them to disease.⁵² Our study found that there is violence in teleconsultations. As far as we know, this is the first report of violence against health personnel in telehealth. As the COVID-19 pandemic has enabled the widespread use of telehealth globally,⁵³ it is important to consider nonphysical violence toward health personnel as a rising challenge for telehealth provision.

The most frequent type of violence against physicians is nonphysical. This is in line with studies conducted in a wide range of cultures and geographic areas, such as Pakistan⁵⁴ and Spain,⁵⁵ in pre-pandemic reports. WPV in any form affects its victims profoundly by producing burnout,^{56–58} increasing absenteeism,⁵⁹ and affecting performance.⁶⁰

Finally, study participants identified lack of policies, procedures, and places to report violent incidents as reasons for the high frequency of WPV. This has been identified as a main cause of violence in other countries.¹¹ In Peru there is no law specifically tailored to address violence toward health professionals. There are relevant laws addressing WPV in general, and in 2019 a bill that modifies the law against violence qualifying as an aggravating factor any aggression against health personnel was proposed by the Peruvian Parliament, given the high frequency of the problem.⁶¹ If the bill passes, a thorough assessment of the effects of its passing on WPV rates should be carried out to gather evidence for the effects of proper policies. As stated before, there is no one-size-fits-all solution for WPV against health care providers.⁶² More evidence is needed of the effects of any strategy, intervention, or legislation to reduce WPV.

Limitations

Our study has limitations. The sampling was non-probabilistic, and only physicians working in COVID-19 hospitals were invited to complete the questionnaire. Therefore, there could have been a preference for physicians who suffered some kind of violence. The limited sample size suggests taking the associations found in our study with caution. Nevertheless, to the best of our knowledge, this is the first study in Peru on WPV against physicians who treat COVID-19 patients, which brings us closer to a reality heavily affecting health professionals. This first approach to characterizing WPV provides information that should be taken into account by health care organizations and researchers as they continue gathering evidence. Further characterization of WPV in other countries, in other health professions, and from different methodologies, such as a qualitative approach, will help us better understand WPV as a whole.

CONCLUSION

Violence against physicians attending COVID-19 patients is very frequent in Peru, with 8 out of 10 having suffered from it and 7 out of 10 having suffered from it more than once. Being a female and working exclusively in a COVID-19 area significantly increase the risk of suffering WPV. The shortcomings of the health system in terms of lack of human resources, equipment, and ICU beds are the main reasons for the high rates of violence, according to the interviewed physicians. Preventive measures must be taken to decrease and avoid violence toward health personnel.

Conflicts of Interest. All authors report no conflicts of interest.

SUPPLEMENTARY MATERIALS

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.jcjq.2021.06.002](https://doi.org/10.1016/j.jcjq.2021.06.002).

Agueda Muñoz del Carpio-Toia, PhD, is Principal Professor and Researcher, Vicerrectorado de Investigación, Escuela de Medicina Humana, Escuela de Postgrado Universidad Católica de Santa María, Arequipa, Peru. **Lucía Begazo Muñoz del Carpio** is Researcher, Facultad de Publicidad y Multimedia Universidad Católica de Santa María, Arequipa, Peru. **Percy Mayta-Tristan** is Researcher and Managing, Dirección de Gestión de Proyectos y Promoción de la Investigación, Universidad Científica del Sur Lima Peru. **Dulce Esperanza Alarcón-Yaquetto** is Professor and Researcher, CONEVID, Unidad de Conocimiento y Evidencia, Facultad de Medicina Alberto Hurtado, Universidad Peruana Cayetano Heredia, Lima, Peru. **Germán Málaga, MD**, is Principal Professor and Lead Researcher at Unidad de Conocimiento y Evidencia, Facultad de Medicina Alberto Hurtado, Universidad Peruana Cayetano Heredia, Lima, Peru. Please address correspondence to Agueda Muñoz del Carpio-Toia, amunozde@ucsm.edu.pe.

REFERENCES

- Xu X-W, et al. Clinical findings in a group of patients infected with the 2019 novel coronavirus (SARS-Cov-2) outside of Wuhan, China: retrospective case series. *BMJ*. 2020 Feb 19;368:m606.
- Palacios Cruz M, et al. COVID-19, a worldwide public health emergency. *Rev Clin Esp*. 2020 Mar 20;221:55–61.
- Mahase E. China coronavirus: WHO declares international emergency as death toll exceeds 200. *BMJ*. 2020 Jan 31;368:m408.
- World Health Organization. WHO Director-General's Opening Remarks at the Media Briefing on COVID-19—11 March 2020. Mar 11, 2020. Accessed Jun 18, 2021. <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19-11-march-2020>.
- Singh G, et al. Workplace violence against resident doctors: a multicentric study from government medical colleges of Uttar Pradesh. *Indian J Public Health*. 2019;63:143–146.
- International Labour Organization. C190—Violence and Harassment Convention, 2019 (No. 190). Jun 10, 2019. Accessed Jun 18, 2021. https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C190.
- Lu L, et al. Prevalence of workplace violence against health-care professionals in china: a comprehensive meta-analysis of observational surveys. *Trauma Violence Abuse*. 2020;21:498–509.
- Arnetz JE, et al. Preventing patient-to-worker violence in hospitals: outcome of a randomized controlled intervention. *J Occup Environ Med*. 2017;59:18–27.
- Alsmael MM, Gorab AH, AlQahtani AM. Violence against healthcare workers at primary care centers in Dammam and Al Khobar, Eastern Province, Saudi Arabia, 2019. *Int J Gen Med*. 2020 Sep 22;13:667–676.
- Liu J, et al. Prevalence of workplace violence against health-care workers: a systematic review and meta-analysis. *Occup Environ Med*. 2019;76:927–937.
- Kitaneh M, Hamdan M. Workplace violence against physicians and nurses in Palestinian public hospitals: a cross-sectional study. *BMC Health Serv Res*. 2012 Dec 20;12:469.

12. Mishra S. Violence against doctors: the class wars. *Indian Heart J.* 2015;67:289–292.
13. Berlanda S, et al. Addressing risks of violence against healthcare staff in emergency departments: the effects of job satisfaction and attachment style. *Biomed Res Int.* 2019 May 28;2019:5430870.
14. El Peruano. Ley de Seguridad y Salud en el Trabajo [Occupational Health and Safety Law]. Ley No. 29783. Aug 20, 2011. Accessed Jun 18, 2021. <https://web.ins.gob.pe/sites/default/files/Archivos/Ley%2029783%20SEGURIDAD%20SALUD%20EN%20EL%20TRABAJO.pdf>.
15. Tuya-Figueroa X, Mezones-Holguín E. [Violence against medical doctors: an issue to consider in human resources for health]. *Rev Peru Med Exp Salud Publica.* 2012;29:164–165.
16. Muñoz del Carpio-Toia A, et al. [Violence against physicians in hospitals of Arequipa, Peru, 2016]. *Acta Médica Peruana.* 2016;33:99–104.
17. Tuya-Figueroa X, et al. [External workplace violence against doctors in hospital services in Lima Metropolitana, Peru 2014]. *Rev Peru Med Exp Salud Publica.* 2016;33:670–679.
18. Mayta-Tristán P, Raa-Ortiz D. [Violence against health workers in Peru: from discourse to action]. *Acta Médica Peruana.* 2019;36:251–252.
19. Nieto-Gutierrez W, et al. Workplace violence by specialty among Peruvian medical residents. *PLoS One.* 2018 Nov 29;13:e0207769.
20. Morales-Castro LJ, Diaz-Velez C. [Physical and verbal aggressions to doctors of hospitals of the Social Security of Health in Chiclayo]. *Revista de la Asociacion Espanola de Especialistas en Medicina del Trabajo.* 2018;27:29–36.
21. Muñoz del Carpio-Toia A, et al. [Workplace violence against doctors in the Primary Care Health Service. Arequipa, Peru]. *Opción.* 2019;35:18–40.
22. Morales J, Cordero J. [Physical and psychological violence in primary care workers in Lima and Callao]. *Revista de la Asociacion Espanola de Especialistas en Medicina del Trabajo.* 2019;28:186–194.
23. Devi S. COVID-19 exacerbates violence against health workers. *Lancet.* 2020;396:658.
24. Covid-19: Indian government vows to protect healthcare workers from violence amid rising cases. *BMJ.* 2020 Apr 23;369:m1631.
25. Martins RS, Bhatti OA, Mian AI. Violence against health care workers in Pakistan during the COVID-19 pandemic. *JAMA Health Forum.* 2020;1:e201263.
26. Taylor L. Covid-19 misinformation sparks threats and violence against doctors in Latin America. *BMJ.* 2020 Aug 11;370:m3088.
27. Larkin H. Navigating attacks against health care workers in the COVID-19 Era. *JAMA.* 2021 May 11;325:1822–1824.
28. Bedoya Jojoa CM. COVID-19: the pandemic of abuse against health personnel in times of pandemic. *Interdisciplinary Journal of Epidemiology and Public Health.* 2020;3:6276.
29. Johns Hopkins University & Medicine, Coronavirus Resource Center. COVID-19 Dashboard. (Updated: Jun 18, 2021.) Accessed Jun 18, 2021. <https://coronavirus.jhu.edu/map.html>.
30. Taylor L. Covid-19: why Peru suffers from one of the highest excess death rates in the world. *BMJ.* 2021 Mar 9;372:n611.
31. Gianella C, Gideon J, Romero MJ. What does COVID-19 tell us about the Peruvian health system? *Canadian Journal of Developmental Studies.* 2021;42:55–67.
32. Alcalde-Rabanal JE, Lazo-González O, Nigenda G. [The health system of Peru]. *Salud Publica Mex.* 2011;53:s243–s254.
33. International Labour Office. Workplace Violence in the Health Sector: Country Case Studies Research Instruments: Survey Questionnaire, 2003. Accessed Jun 18, 2021 https://www.who.int/violence_injury_prevention/violence/interpersonal/en/WVquestionnaire.pdf.
34. Google. Forms. 2003. Accessed Jun 18, 2021. <https://docs.google.com/forms/u/0/>.
35. Tiruneh BT, et al. Prevalence of workplace violence in Northwest Ethiopia: a multivariate analysis. *BMC Nurs.* 2016 Jul 8;15:42.
36. Velásquez A., Suarez D., Nepo-Linares E. [Health sector reform in Peru: law, governance, universal coverage, and responses to health risks]. *Rev Peru Med Exp Salud Publica.* 2016;33:546–555.
37. Consorcio de Investigación Económica y Social [Impoverishment Due to Out-of-Pocket Expenditure in Health: Incidence of Out-of-Pocket Expenditure in Health in Peru 2006–2009]. Ruiz HL. Feb 2012. Accessed Jun 19, 2021 http://cies.org.pe/sites/default/files/investigaciones/empobrecimiento_por_gasto_de_bolsillo_en_salud_0.pdf.
38. Shamasunder S, et al. COVID-19 reveals weak health systems by design: why we must re-make global health in this historic moment. *Glob Public Health.* 2020;15:1083–1089.
39. Rubin R, Abbasi J, Voelker R. Latin America and its global partners toil to procure medical supplies as COVID-19 pushes the region to its limit. *JAMA.* 2020 Jul 21;324:217–219.
40. Garcia PJ, et al. COVID-19 response in Latin America. *Am J Trop Med Hyg.* 2020;103:1765–1772.
41. Herrera-Añazco P, et al. Some lessons that Peru did not learn before the second wave of COVID-19. *Int J Health Plann Manage.* 2021;36:995–998.
42. Fraser B. COVID-19 strains remote regions of Peru. *Lancet.* 2020 May 30;395:1684.
43. Kumar M, et al. A study of workplace violence experienced by doctors and associated risk factors in a tertiary care hospital of south Delhi, India. *J Clin Diagn Res.* 2016;10.LC06–LC10
44. Naveen Kumar P, Betadur D, Chandermani. Study on mitigation of workplace violence in hospitals. *Med J Armed Forces India.* 2020;76:298–302.
45. Njaka S, et al. Work place violence (WPV) against health-care workers in Africa: a systematic review. *Heliyon.* 2020 Sep 14;6:e04800.
46. Fallahi-Khoshknab M, et al. Physical violence against health care workers: a nationwide study from Iran. *Iran J Nurs Midwifery Res.* 2016;21:232–238.
47. Sumari C, Suyu-Prieto F, Moreno-Loaiza O. [Violence against doctors in the emergency unit of a high complexity hospital in Arequipa, Peru 2016]. *Acta Médica Peruana.* 2016;33:246–247.
48. Sun T, et al. Workplace violence, psychological stress, sleep quality and subjective health in Chinese doctors: a large cross-sectional study. *BMJ Open.* 2017 Dec 7;7:017182.
49. Kumari A, et al. Workplace violence against doctors: characteristics, risk factors, and mitigation strategies. *J Postgrad Med.* 2020;66:149–154.
50. Shader RI. COVID-19 and depression. *Clin Ther.* 2020;42:962–963.
51. Tanoue Y, et al. Mental health of family, friends, and co-workers of COVID-19 patients in Japan. *Psychiatry Res.* 2020;291:113067.

52. Curioso WH, Galán-Rodas E. [The role of telehealth in the fight against COVID-19 and the evolution of the Peruvian regulatory framework]. *Acta Médica Peruana*. 2020;37:366–375.
53. Monaghesh E, Hajizadeh A. The role of telehealth during COVID-19 outbreak: a systematic review based on current evidence. *BMC Public Health*. 2020 Aug 1;20:1193.
54. Ahmed F, Khizar Memon M, Memon S. Violence against doctors, a serious concern for healthcare organizations to ponder about. *Ann Med Surg (Lond)*. 2017 Nov 15;25:3–5.
55. Serrano Vicente MI, et al. [Aggression to health care personnel in Spain: a systematic review. *Rev Esp Salud Publica*. 2019 Oct 2;93:e201910097.
56. Fessell D, Cherniss C. Coronavirus disease 2019 (COVID-19) and beyond: micropractices for burnout prevention and emotional wellness. *J Am Coll Radiol*. 2020;17:746–748.
57. Arias-Gallegos WL, Muñoz del Carpio Toia A. [Burnout syndrome in nursery staff of Arequipa, Peru]. *Rev Cuba Salud Publica*. 2016;42(4):1–19.
58. Hacer TY, Ali A. Burnout in physicians who are exposed to workplace violence. *J Forensic Leg Med*. 2020;69:101874.
59. Sibbald B. Workplace violence is not part of a doctor's job. *CMAJ*. 2017 Feb 6;189:E184.
60. Hamdan M, Abu Hamra A. Workplace violence towards workers in the emergency departments of Palestinian hospitals: a cross-sectional study. *Hum Resour Health*. 2015 May 7;13:28.
61. Congreso de la República. [Bill No. 4833 that modifies articles 121 and 122 of the Peruvian Penal Code. Sep 26, 2019. Accessed Jun 18 2021. https://leyes.congreso.gob.pe/Documentos/2016_2021/Proyectos_de_Ley_y_de_Resoluciones_Legislativas/PL04833_20190920.pdf.
62. Phillips JP. Workplace violence against health care workers in the United States. *N Engl J Med*. 2016 Apr 28;374:1661–1669.