REVIEW
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The health of workers and COVID-19 pandemic: from review to criticism

A saúde dos trabalhadores e a pandemia de COVID-19: da revisão à crítica

Diego de Oliveira Souza*

ABSTRACT

Introduction: With the emergence of the COVID-19 pandemic, science needs to give quick answers. The context has been violent, especially for workers. **Objective:** critically summarize the main scientific recommendations for workers in the face of the COVID-19 pandemic. **Method:** This is a literature review from PubMed e VHL, in which 19 publications were obtained for analysis. **Results:** In the literature, emphasis was placed on the issue of PPE, hygiene measures and other individual measures. Some studies address organizational issues and surveillance for healthcare workers, but also for workers in general. **Conclusions:** In addition to the synthesis of publications, the review contributes with reflections and provocations with a view to further interventions.

KEYWORDS: Coronavirus; Pandemics; Occupational Health; Work

RESUMO

Introdução: Em meio a um contexto atípico, com a emergência da pandemia de COVID-19, a ciência precisa dar respostas na mesma velocidade da propagação do SARS-CoV-2. A conjuntura tem sido especialmente violenta em relação aos trabalhadores dos serviços essenciais, sobremodo, os do setor saúde. **Objetivo:** Sintetizar, criticamente, as principais recomendações científicas para os trabalhadores ante a pandemia de COVID-19. **Método:** Trata-se de uma revisão de literatura a partir das bases PubMed e BVS, nas quais se obteve 19 publicações para análise. **Resultados:** Constatou-se ênfase para a questão dos EPI, medidas de higiene e outras medidas protetivas no âmbito individual. Alguns estudos abordam questões mais amplas, organizacionais e da esfera da vigilância voltada ao setor saúde, mas também aos trabalhadores em geral. **Conclusões:** Para além da síntese das publicações, a revisão contribui com reflexões e provocações com vistas às intervenções ulteriores.

PALAVRAS-CHAVE: Coronavírus; Pandemias; Saúde do Trabalhador; Trabalho

Universidade Federal de Alagoas,
Arapiraca, AL, Brasil

* **E-mail:** diego.souza@arapiraca.ufal.br

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INTRODUCTION

This article aims to critically review the scientific literature produced on the health of workers in the first months of the COVID-19 pandemic, contributing to the identification of recommendations for the prevention of infection and its consequences.

In general terms, the study is justified given the recent character of the pandemic, which requires efforts by the scientific community to understand its multiple aspects, subsidizing interventions. Note that the Chinese health authorities called the World Health Organization (WHO) on December 31, 2019, regarding cases of pneumonia in the city of Wuhan (Hubei province), China, with suspicion of being caused by a new type of coronavirus. Just over two months later, on March 11, the situation is officially declared as a pandemic of the disease caused by the new coronavirus, SAR-CoV-2[1].

The global spread was rapid, as on April 25, 2020, there were already 2,719,827 cases and 187,705 deaths worldwide. The continents most affected are Europe and the Americas, since in Europe, on the same day, there were 1,314,666 cases and 119,463 deaths and, in the Americas, 1,047,508 cases and 53,103 deaths, 860,772 cases and 44,053 deaths only in the United States of America (USA)[2].

In specific terms, the study's justification lies in the fact that one of the main problems faced during the pandemic is the relevant index of workers in essential services infected or killed by COVID-19, especially those in the health sector. As of April 1, 2020, for example, there were about 6,500 health workers infected in Spain, 6,200 in Italy, and 3,300 in China. It is estimated that in the countries most affected in the first quarter of 2020, 4% to 12% of confirmed cases are among health workers[3].

Among the aspects that demand greater concern are the health and safety conditions of workers who are at the forefront of care for the infected, a decisive factor for the success of facing the pandemic. In addition, other impacts on workers, in general, are already perceived, from the infection itself in those who work in services that remained functioning during social distance to psycho-emotional issues related to fear of infection, economic losses, routine change, and isolation[1]. Therefore, this review sought to know what science was able to understand about the health of workers in the first four months of the pandemic.

METHOD

It is a literature review that seeks the scope of studies on the health of workers during the COVID-19 pandemic, integrating the knowledge already produced and submitting it to critical dialogue.

The search for articles was carried out between March and April 2020, in the following databases: National Library of Medicine (PubMed) and Virtual Health Library (VHL). In both PubMed and VHL, the combination of descriptors used was: coronavirus and occupational health.

Texts published between January and April 2020 in English, Portuguese, and Spanish were selected. No publications were included that addressed diseases caused by other strains of coronavirus, which did not refer to the health of workers or duplicates. It should be noted that publications were selected regardless of the type of study, including brief communications, editorials, letters, and the like, given the recent nature of this investigative line and the need to cover the maximum amount of knowledge already produced.

The selected publications were read in full, extracting some of their characteristics: authors, magazine, indexing base, methodology, language, and synthesis of the results/conclusions. A synthesis of the results and discussions of the publications was carried out for later critical reflection.

RESULTS AND DISCUSSION

The PubMed search resulted in 15 publications and, in the VHL, 13. Chart 1 shows the details of the two searches.

Comparing the results obtained in PudMed and in the VHL, it was identified that ten publications appeared in both, six only in PubMed, and three only in the VHL, totaling 19 publications, according to the Figure.

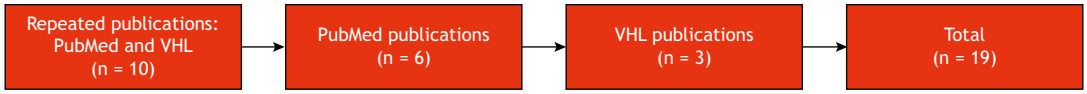
Regarding the main characteristics of the publications, it is noteworthy that all are in the English language, but one also has a Portuguese version; there was no repetition of journals, and therefore 19 different journals. Most of the publications were synthetic, such as brief communications, letters, or comments (n = 14) but there was also a literature review, two systematic reviews, and a clinical trial. Chart 2 presents an overview of the characteristics extracted from the publications in the review.

As for the results and discussions, it was found, predominantly, approaches aimed at health workers. Among these, there were

Chart 1. Selection of articles in PubMed and the VHL (Jan-Apr 2020).

	PubMed	VHL
Search results (coronavirus and occupational health)	121	86
Selection of texts published in 2020	22	24
Selection of texts published in journals	22	20
Selection of texts written in English, Portuguese, or Spanish	22	18
Partial selection total	22	18
Exclusion of texts dealing with other viruses or diseases	4	3
Exclusion of texts that did not refer to the health of workers	2	0
Repetition exclusion within the same base	0	2
Total on each search after exclusions	16	13

Source: Elaborated by the author, 2020.
PubMed: National Library of Medicine; VHL: Virtual Health Library.



Source: Elaborated by the author, 2020.

Figure. Distribution of publications by search and indexing base (Jan-Apr 2020).

those who dedicated themselves to specialized branches or to organizational and collective measures within health institutions. Finally, there were still those who addressed the health of workers in general.

Risks and recommendations to health workers

In the search for evidence about the safe distance between individuals, Bahl et al.[4] found that the recommendation of 1 to 2 meters is not safe in all situations, because there is evidence that some droplets reach up to 8 meters. Available studies also show that SARS-CoV-2 can be detected in the air 3h after spraying. They recommend precaution and the adoption of high-level personal protection for health workers, even though they keep their distance most of the time.

The issue of the use of personal protective equipment (PPE) is the focus of Heinzerling et al.[5]. The authors found three infected workers among 43 tested after contact with a COVID-19 patient. Two of them performed high-risk procedures and developed symptoms. Both reported that they spent about 3h with the patient during respiratory care. Neither of them permanently wore a face mask, respirator, eye protection, or gown. The third infected by the virus, who was at medium risk, reported close contact with the patient for a total of 2h but did not perform aerosol procedures. This worker reported using PPE but occasionally removed the mask to speak and did not wear goggles.

The use of PPE is, in fact, decisive for the prevention of COVID-19 among health workers but if it is of appropriate material and used in the correct way. Verbeek et al.[6] demonstrated, in simulation studies for the placement and removal of PPE, that the average contamination rates were 25% for the groups that received training and 67% for the control groups.

The quality of the equipment is of the utmost importance since modifications in the design of the PPE can reduce contamination, such as a sealed gown with adjustable collar to the neck, wrists, and hands; and the best coverage of the gown/wrist interface[6]. In addition to correct use, storage, and replacement at the appropriate time are factors to be considered[7].

The sudden high demand for PPE has caused the lack of these supplies, which generates anguish and other psychic burdens for frontline workers[19], as well as controversial discussions by managers, regarding reuse and replacement management.

Chart 2. Main characteristics of the reviewed publications (Jan-Apr 2020).

Authors	Journal	Database	Language	Type of study
Bahl et al.[4]	The Journal of Infectious Diseases	PubMed/VHL	English	Systematic review
Heinzerling et al.[5]	Morbidity and Mortality Weekly Report	PubMed/VHL	English	Report
Verbeek et al.[6]	Cochrane Database of Systematic Reviews	PubMed	English	Systematic review
Antal et al.[7]	Orvosi Hetilap	PubMed	English	Literature review
Spinazzè et al.[8]	Annals of Work Exposures and Health	PubMed/VHL	English	Comment
Zhang et al.[9]	Frontiers of Medicine	PubMed/VHL	English	Short communication
Elston1[0]	Journal of the American Academy of Dermatology	PubMed/VHL	English	Letter to the editor
Zhao et al.[11]	Journal of Cardiothoracic and Vascular Anesthesia	PubMed/VHL	English	Clinical trial
Gallasch et al.[12]	Rev Enferm UERJ	VHL	English/Portuguese	Topical article
Li[13]	Emerging Microbes & Infections	VHL	English	Protocol
Gan et al.[14]	Safety and Health at Work	PubMed/VHL	English	Short communication
Bann et al.[15]	Head & Neck	PubMed/VHL	English	Short communication
Chen, Chi[16]	Cancer Cytopathology	PubMed	English	Comment
Carver, Phillips[17]	Workplace Health & Safety	PubMed/VHL	English	Short communication
Gudi, Tiwari[18]	International Journal of Occupational and Environmental Medicine	PubMed	English	Short communication
Koh[19]	Occupational Medicine	PubMed/VHL	English	Editorial
Sim[20]	Occupational and Environmental Medicine	PubMed	English	Editorial
Fadel et al.[21]	The Lancet. Public Health	PubMed	English	Letter
Liem et al.[22]	The Lancet. Psychiatry	VHL	English	Letter

Source: Elaborated by the author, 2020.
PubMed: National Library of Medicine; VHL: Virtual Health Library.

About this, Spinazzè et al.[8] brought the recommendations of the *Associazione Italiana degli Igienisti Industriali* (AIDII), when they emphasize that there must be a rational use of PPE, not recommending reuse, since, in general, there is no proof of its efficacy after disinfection, as changes in the material are likely. They made the reservation that, with proof of effectiveness, reuse can be a measure for exceptional, emergencies, but never routine. Because of this, Zhang et al.[9] defended the creation of centralized systems and coordinated networks for the rapid supply of PPE, with the articulation of the various governmental spheres, units, and health teams.

Another aspect of the issue of PPE is its prolonged use and the resulting consequences. Elston[10] reported the occurrence of damage to health due to prolonged use, such as skin lesions on the nose, hands, cheeks, and forehead, highlighted that glasses are more often associated with injuries than masks, and recommended PPE with more appropriate anatomical adjustments, adoption of shorter shifts, testing for skin sensitivity, and use of barrier films and latex-free gloves.

Other measures to protect health workers include hand hygiene[10,11,12], monitoring signs and symptoms and early diagnosis[9,13,12], removal of individuals from the risk group from clinical and laboratory activities[13], disinfection in hotels or accommodation where workers settle, and training of a team of specialists to assist other workers in the health sector[9].

Measures of organizational and collective reach in health units

The issue of the environment and processes can favor or hinder the spread of SARS-CoV2, which gives relevance to engineering and management measures in health institutions. In this context, Gan et al.[14] proposed a system engineering model for preventing in-hospital infection. In the model, the central element is the health worker, and, at the apex, there are work tasks, technologies and tools, environmental factors, and organizational conditions. Some suggested measures were: segregation of those who care for individuals suspected or confirmed with COVID-19; stratification of tasks with a view to choosing PPE levels; testing and monitoring of health workers' temperature; ongoing support and guidance; monitoring of symptoms and restriction of visitors.

The use of engineering and measures designed to promote adequate ventilation of the rooms can contribute to reducing the chances of infection[8]. Performing surgical procedures in a negative pressure room[11]; measures that prevent agglomerations in the pre-service[12], restriction of visitors in institutions[14], the definition of general procedural and organizational measures[8] or specific to each level of care[5,15,16] were some of the measures with the broadest reach found in the literature. Specific training for those on the front lines[6,9,13], as well as the establishment of specific epidemiological surveillance networks for health workers[9,12] are also cited as important collective strategies.

Although the emphasis is on personal protection, these measures of greater scope are fundamental to mitigate the spread of COVID-19 in health services.

Recommendations for skilled health workers

Three articles discuss specific situations of specialized health services. In addition to basic hygiene measures, basic PPE, and distance, there are protocols for specific situations.

Bann et al.[15] recommended protective measures for otorhinolaryngologists, such as the postponement of elective procedures and, in those that cannot be postponed, maintaining a minimum team to perform; testing of all staff 48h before the procedure; not using a high-flow nasal cannula in the care of patients with tracheostomy and using high-protection PPE in these cases; the use of video and disposable laryngoscope for intubations; testing for SARS-CoV-2 48h before in patients requiring urgent surgeries in the upper airways, followed by quarantine and performing a rapid test in the immediate preoperative period; and telehealthcare for clinical cases.

For the case of anesthesia procedures, Zhao et al.[11] developed a protocol that includes screening before the admission of patients to detect suspected or confirmed cases. In these cases, the individual must be referred to a negative pressure operating room, with high protection measures for health workers, which includes PPE. After the procedure, complete disinfection and sterilization of the room must be carried out and the active team must perform rigorous cleaning of the entire body.

Chen e Chi[16] recommended biosafety measures in cytopathology laboratories, stratifying them by type of procedure. In general, risk assessment and control for each type of trial have been suggested; training on infection prevention and control; availability of PPE appropriate to the risk level of each stratum of activities; access to counseling and psychological support services; guarantee of environmental protection; rigorous disinfection of surfaces; encouragement of accident reporting, self-assessment, and symptom reporting; adapting working hours and increasing breaks; guarantee of safe transportation; guarantee of safekeeping and adequate transport of the collected material; appropriate setting for the activity level; decreased aerosol production in procedures; proper disposal of all PPE and waste; and limiting the number of people present in the procedure rooms.

Otorhinolaryngologists, anesthesiologists, and laboratory workers, among others, are groups that are under the highest degree of biological risk, as there is direct contact with aerosols, secretions, or collection of material for diagnosis. It is necessary to constantly evaluate and update the results of the measures implemented to protect these groups.

Risks and recommendations for workers in general

Six publications highlight COVID-19 as a disease related to work outside the health sector. Carver e Phillips[17] mentioned measures to be taken by employers, especially the establishment of a home office for workers and quarantine for symptomatic people. They highlighted the role of occupational nurses in educating workers in the adoption of preventive hygiene measures and clarifications on social exclusion. Gudi e Tiwari[18] corroborated, highlighting the importance of adopting remote work from home and rotating teams in the workplace.

For Koh[19], COVID-19 is the first new occupational disease of this decade, which demands the rapid detection of occupations with the greatest exposure. According to the author, in addition to health workers, the latest facts revealed that they deserve attention: sellers of hospital articles, domestic workers, tour guides, goldsmiths who assist tourists, multinational executives, taxi drivers, private drivers, security agents, casino and resorts employees, and construction workers. Sim[20] added other occupations, such as sea and aircrews, emergency services personnel (police, fire, etc.), caregivers, educators, domestic workers, food workers, and public transport drivers.

In order to preserve the health of these workers, in addition to teleworking and quarantine measures, hygiene measures were reinforced, as well as the importance of disease tracking, notification and surveillance, educational actions, and telehealth monitoring[21]. In the case of immigrant workers, the smartphone was cited as an ally in accessing information in the source language, resolving the disadvantage faced by health systems in the countries where they settled[22].

Given the recent nature of the pandemic, many mediations on the relationship between COVID-19 and work must still be questioned. For now, there is an urgent need to disseminate and implement measures that protect workers and soften the burden of health systems worldwide.

From review to criticism

The most evident issue in the review concerns the recommendation on PPE, which is understandable given the more urgent need to stop transmission. In the same vein, hygiene and disinfection measures stand out, especially for health workers, exposed to high levels of biological risks, when these individual measures are decisive for the preservation of health.

The difficulties in protecting health workers, of which the lack of PPE is now evident, is a chronic issue in several countries, preceding the pandemic. The current phase exposes and highlights the problem to the world, which should demand reflections in order to think about what underlies it. Here, considering the expansion of the critical approach, the articulation that this problem presents with a context of the fragility of public health systems, often underfunded, with a deficit in the number of workers, beds, and structural resources in general, is highlighted. Equating this issue at the base of health systems is imperative for a horizon of greater consistency in coping with emergency public health situations but also for everyday situations[23].

In this same perspective, the sphere of Occupational Health Surveillance (VISAT) must be strengthened in order to generate accurate information and, therefore, effective and efficient practices. It should be noted that the elaboration/execution of VISAT actions can take place as a mere bureaucratic and institutional procedure, in which a worker is a supervised object, or, in another perspective, considering that

> [...] there is a transversal variable that supports the very existence of VISAT, its raison d'être: the worker, with his own knowledge, socially represented in the most appropriate way in the context in which he is inserted (union, association, movement, commission, advice, etc.). There is no VISAT without the protagonism of that which is the most immediate shield from the impacts that the productive processes cause to your health[24].

The second perspective mentioned is the one that reaches the desired range for VISAT, and the theoretical-methodological matrix should be the basis for the recommendations, policies, programs, and protocols that involve VISAT, when the knowledge of the workers themselves has a structuring function.

Linked to this idea, there is the prospect of strengthening educational activities, which in the revised production were oriented to the prevention of infection in general or to professional expertise to work in health services. These actions must also be thought and executed with the protagonism of the workers, as active subjects, in the sense that the scientific authority of the technicians does not overlap or ignore the authority of the workers' knowledge about the relationships established in the work process[25]. Obviously, educational activities of this magnitude are coated with complexity and tensions towards the *status quo*, presupposing consistent collective organizations, which only happens throughout a historical process.

The lag in this process cannot be remedied, in its fullness, in the midst of the "heat" of a public health emergency, which sometimes makes pragmatism prevail. In this context, with the problem already underway, educational activities from various perspectives that aim to contribute to the confrontation of the pandemic are welcome, with the proviso that the horizon needs to be broader, with the strengthening of VISAT, of education in health and permanent education, guided by the perspective of workers to anticipate problems.

This horizon is valid for the group of workers, since, although they are exposed to SARS-CoV-2 at a lower level than workers in the health sector, they are under different workloads, especially in the middle to social changes corollary to the pandemic. Attention is drawn to the economic-social and psycho-emotional implications related to social isolation but with the proviso that, in the critical perspective advocated here, the pandemic is not responsible for the social fragility to which they are subjected (although it is an aggravating factor), but, on the contrary, it is an unequal economic and social system that precedes the pandemic that places them in a disadvantaged situation in the face of the necessary isolation. It is noteworthy that in a publication[22] reference was made to the past unequal conditions that reverberate in the context of the pandemic, when the case of workers who are immigrants in several nations and see themselves unprotected in a doubly atypical situation is cited: the pandemic and being in the space of others.

This reflection must extend towards the apprehension of the differences that exist between nations and, within them, between the strata of the working class. Furthermore, considering the unequal structure that emerges from the production relations is decisive for the understanding that a (considerable) part of the workers already lives, daily, in a socially borderline situation,

when health (or the loss of it) is, also, an expression of this inequality[26]. In addition, this assumption is appropriate for the analysis of health workers, immersed in a context of precarious work and the institutions in which they operate, which broke out with violence in the face of the pandemic.

Indeed, in addition to the heroic pecking now attributed to health workers and other essential services, they need better working conditions; best qualification; better-structured health systems; broader policies, programs, and protocols that allow them to exercise the protagonism that is their right, and, finally, the transformation of the work dynamics that demeans them daily. In addition to the (very important) issues of PPE and hygiene measures, more radical changes are necessary, that is, from the roots. Facing a problem of the proportion of a pandemic bearing the weight of this historical process has undoubtedly been an obstacle to the intended success, which only feeds back the fateful burden, against the workers themselves.

CONCLUSIONS

The literature review carried out in this article showed that science has given quick answers to COVID-19 when there are already a reasonable number of publications in a few months. In the specific case of the health of workers, it was possible, here, to review 19 publications that present recommendations, reflections, and decisive evidence for facing the pandemic, especially visualizing the universe of health workers but also with contributions for workers in general.

In addition to summarizing the results and discussions of these publications, the article presented here contributed to, starting with and beyond the review, bringing points for critical reflection and some provocations. Certainly, science and philosophy still have a long way to go in order to understand the multiple aspects of the pandemic that impact the health of workers and, thus, subsidize further interventions.

REFERENCES

1. Representação da Organização Pan-americana da Saúde no Brasil – OPAS Brasil. COVID-19 (doença causada pelo novo coronavírus). Folha Informativa. 2020[acesso 26 abr 2020]. Disponível em: https://www.paho.org/bra/index.php?option=com_content&view=article&id=6101:covid19&Itemid=875
2. World Health Organization – WHO. Coronavirus disease 2019 (COVID-19): situation report 96. Genebra: World Health Organization; 2020[acesso 26 abr 2020]. Disponível em: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200425-sitrep-96-COVID-19.pdf?sfvrsn=a33836bb_2&ua=1
3. British Broadcast Corporation – BBC. Coronavírus: por que a COVID-19 afeta tanto os profissionais de saúde? BBC News Brasil. 1 abr 2020[acesso 27 abr 2020]. Disponível em: https://www.bbc.com/portuguese/internacional-52119508
4. Bahl P, Doolan C, Silva C, Chughtai AA, Bourouiba L, MacIntyre CR. Airborne or droplet precautions for health workers treating COVID-19? J Infect Dis. 2020:1-29. https://doi.org/10.1093/infdis/jiaa189
5. Heinzerling A, Stuckey JM, Scheuer T, Xu K, Perkins KM, Resseger H et al. Transmission of COVID-19 to health care personnel during exposures to a hospitalized patient: Solano county, California, february 2020. MMWR Morb Mortal Wkly Rep. 2020;69(15):472-6. https://doi.org/10.15585/mmwr.mm6915e5
6. Verbeek JH, Rajamaki B, Ijaz S, Sauni R, Toomey E, Blackwood B et al. Personal protective equipment for preventing highly infectious diseases due to exposure to contaminated body fluids in healthcare staff. Cochrane Database Syst Rev. 2020;4(4):1-147. https://doi.org/10.1002/14651858.CD011621.pub4
7. Antal M, Szabó RM, Juhász Z, Vereb T, Piffkó J. New information for the clinical detection of COVID-19 virus infection and options for protection of healthcare workers in the head and neck region. Orv Hetil. 2020;161(17):660-6. https://doi.org/10.1556/650.2020.31806
8. Spinazzè A, Cattaneo A, Cavallo DM. COVID-19 outbreak in Italy: protecting worker health and the response of the italian industrial. Ann Work Expo Health. 2020:1-6. https://doi.org/10.1093/annweh/wxaa044
9. Zhang Z, Liu S, Xiang M, Li S, Zhao D, Huang C et al. Protecting healthcare personnel from 2019-nCoV infection risks: lessons and suggestions. Front Med. 2020;14(2):229-31. https://doi.org/10.1007/s11684-020-0765-x
10. Elston DM. Occupational skin desease amon health care workers during the coronavírus (COVID-19) epidemic. J Am Acad Dermatol. 2020;82(5):1085-6. https://doi.org/10.1016/j.jaad.2020.03.012
11. Zhao S, Ling K, Yan H, Zhong L, Peng X, Yao S et al. Anesthetic management of patients with COVID-19 infections during emergency procedures. J Cardio Vasc Anest. 2020;34(5):1125-31. https://doi.org/10.1053/j.jvca.2020.02.039
12. Gallasch CH, Cunha ML, Pereira LAS, Silva Junior JS. Prevenção relacionada à exposição ocupacional: COVID-19. Rev Enferm UERJ. 2020;28:1-6. https://doi.org/10.12957/reuerj.2020.49596
13. Li T. Diagnosis and clinical management of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection: an operational recommendation of peking union medical college hospital (V2.0). Emerg Microbes Infect. 2020;9(1):582-5. https://doi.org/10.1080/22221751.2020.1735265
14. Gan HW, Lim JW, Koh D. Preventing intra-hospital infection and transmission of coronavirus disease 2019 in healthcare workers. Saf Health Work. 2020;1-3. https://doi.org/10.1016/j.shaw.2020.03.001

15. Bann DV, Patel VA, Saadi R, Gniady JP, Goyal N, McGinn JD et al. Impact of coronavirus (COVID-19) on otolaryngologic surgery: brief commentary. Head Neck. 2020;42(2):1227-34. https://doi.org/10.1002/hed.26162
16. Chen CC, Chi CY. Biosafety in the preparation and processing of cytology specimens with potential coronavirus (COVID-19) infection: perspectives from Taiwan. Cancer Cytopathol. 2020;108(5):309-16. https://doi.org/10.1002/cncy.22280
17. Carver PE, Phillips J. Novel coronavirus (COVID-19): what you need to know. Workplace Health Saf. 2020;68(5):250. https://doi.org/10.1177/2165079920914947
18. Gudi SK, Tiwari KK. Preparedness and lessons learned from the novel coronavirus disease. Int J Occup Environ Med. 2020;11(2):108-12. https://doi.org/10.34172/ijoem.2020.1977
19. Koh D. Occupational risks for COVID-19 infection. Occup Med (Lond). 2020;12(70):3-5. https://doi.org/10.1093/occmed/kqaa036
20. Sim MR. The COVID-19 pandemic: major risks to healthcare and other workers on the front line. Occup Environ Med. 2020;77(5):281-2. https://doi.org/10.1136/oemed-2020-106567
21. Fadel M, Salomon J, Descatha A. Coronavirus outbreak: the role of companies in preparedness and responses. Lancet Public Health. 2020;5(4):1. https://doi.org/10.1016/S2468-2667(20)30051-7
22. Liem A, Wang C, Wariyanti Y, Latkin CA. The neglected health of international migrant workers in the COVID-19 epidemic. Lancet Psychiatry. 2020;7(4):20. https://doi.org/10.1016/S2215-0366(20)30076-6
23. Souza DO. Financeirização, fundo público e os limites à universalidade da saúde. Saude Deb. 2019;43(esp. 5):71-81.
24. Vasconcellos LCF. Vigilância em saúde do trabalhador: decálogo para uma tomada de posição. Rev Bras Saude Ocup. 2018;43(supl. 1):1-9. https://doi.org/10.1590/2317-6369000029517
25. Vasconcellos LCF, Almeida CVB, Guedes DT. Vigilância em saúde do trabalhador: passos para uma pedagogia. Trab Educ Saude. 2009;7(3):445-62. https://doi.org/10.1590/S1981-77462009000300004
26. Souza DO, Melo AISC, Vasconcellos LCF. A saúde dos trabalhadores em "questão": anotações para uma abordagem histórico-ontológica. Soc Quest. 2015;18(34):107-36.

Author's Contributions

Souza DO - Conception, planning (study design), acquisition, analysis, data interpretation, and writing of the work. The author approved the final version of the work.

Conflict of Interests

The authors inform that there is no potential conflict of interest with peers and institutions, politicians, or financial in this study.