DOI: 10.1590/1413-812320232810.10062023EN

Associations between sociodemographic and health characteristics of Ministry of Health workers and COVID-19

Etel Matielo (https://orcid.org/0000-0002-5336-5623) [1]
Elizabeth Artmann (https://orcid.org/0000-0002-8690-5964) [2]
Mayara Suelirta da Costa (https://orcid.org/0000-0002-2835-4033) [3]
Michele Neves Meneses (https://orcid.org/0000-0002-0933-7051) [4]
Patrícia Ferrás Araújo da Silva (https://orcid.org/0000-0002-7474-4972) [1]

Abstract *The present study aimed to describe sociodemographic and health characteristics of Ministry of Health workers and possible associations with work affected by COVID-19. This was an observational, descriptive, and cross-sectional study, conducted between July and October 2021. This study counted on the participation of 821 workers (67.6% women and 32.4% men), 53.3% of white race/color, 66.7% with a postgraduate degree, 38.7% with an income of 5 to 10 minimum wages. In addition, 65.4% reported having some form of disease, 69.2% had health insurance, 64.5% consumed alcohol, 6.1% were smokers, 67.4% practiced physical activity, and 53.8% and 52.2%, respectively, considered their physical and mental health to be good. For 81.8%, work was affected by the pandemic. Factors associated with work affected by the pandemic, after controlling for confounding variables, were level of education and mental health. According to 55%, the emotional aspects represent the variable that most affected their work. The results pointed out characteristics of Ministry of Health workers that can contribute to the planning of health protection and promotion actions. Investment in future studies is warranted, especially as regards the issue of health workers that are not directly in the "frontline" of COVID-19 but who are essential for crisis management during a pandemic.*

Key words *Working Conditions, Mental Health, Health Workers, COVID-19, Remote Work*

[1] Ministério da Saúde do Brasil. Esplanada dos Ministérios, Bloco G. 70058-900 Brasília DF Brasil. etelmatielo@gmail.com
[2] Escola Nacional de Saúde Pública Sérgio Arouca, Fundação Oswaldo Cruz. Rio de janeiro RJ Brasil.
[3] Escola de Governo, Fiocruz Brasília. Brasília DF Brasil.
[4] Universidade Federal do Rio Grande do Sul. Porto Alegre RS Brasil.

Introduction

There is a growing production of studies on health workers, including support professionals. Regarding COVID-19, several studies have investigated the seroprevalence for SARS-CoV-2 in health workers as a whole[1-3], showing inequalities in infection in different groups. Other aspects have also been studied. The broadest survey on the working conditions of health professionals and the consequences in the current work process considering physical, emotional and psychic aspects showed objective data on risks and suffering, as well as the lack of recognition and invisibility among professionals[4]

In recent years, especially with the implementation of Constitutional Amendment No. 95/2016, which reduces investments in the public sector and affects the work process, together with the COVID-19 pandemic in 2020 and 2021, the conditions of work in general, especially among health workers, were extremely affected, which has been reported in scientific articles and partial research results[4,5].

The Brazilian Ministry of Health declared a State of Emergency in Public Health of National Importance (*Emergência em Saúde Pública de Importância Nacional* - ESPIN) on February 3, 2020, through Ordinance No. 188, due to the pandemic caused by SARS-CoV-2 (COVID-19)[6] and was valid until April 2022[7]. During that period, a set of acts, as shown in Chart 1, guided remote work and the organization of work shifts and alternative schedules in order to avoid excessive movement of people in federal agencies, as well as to protect the workers most prone to COVID-19. In the management of the Ministry of Health, a large part of the workers entered into remote and home office work, especially due to health conditions that were more susceptible to developing serious cases of COVID-19, which had an impact on the physical-emotional and life conditions of those affected by the pandemic

In this sense, the survey "Survey of socioeconomic and epidemiological factors associated with the health conditions of workers in the Ministry of Health", carried out between July and October 2021, sought to characterize the sociodemographic, work, and health conditions of Ministry of Health workers, relating them to COVID-19 in an attempt to describe the characteristics of the Ministry of Health workers and verify possible associations regarding how this work process was affected by the pandemic.

Methodology

This is an observational, descriptive, and cross-sectional study. Sampling was formulated by convenience. The sample calculation considered the population of 23,366 active Ministry of Health workers (permanent servants; temporary contractors hired by an international organization, Upper Management and Advisory Board (*Direção e Assessoramento Superior* - DAS), with no legal employment relationship; higher education grant recipients contracted by an international organization; higher-level interns, mid-level interns. and outsourced workers). A sampling error of 5% and a 95% Confidence Interval (CI), reaching the number of 378 in the sample calculation, which was surpassed by the total number of 821 workers who responded to the survey.

The instrument used for data collection was a questionnaire prepared by the multidisciplinary team of the Health Promotion Service (SEPROS), applied via Google Forms between July and October 2021, counting on 821 active Ministry of Health workers. Through a link posted on the Ministry of Health's Intranet and sent by email through the transmission list. All active workers included in the Integrated Human Resources System (SIAPE) were invited to participate, as were employees, outsourced workers and grant recipients. The total number of workers at the Ministry of Health in May 2021 was 23,366 people.

To avoid duplication of answers to the questionnaire, as well as to preserve the participants' identity, the data collected for each participant were linked to codes assigned to the variable categories, taking care to eliminate duplications due to coincidences in the identification variables. Participants with missing data were eliminated from the database.

For the purposes of this article, the dependent variable was "work affected by the pandemic: yes or no", together with the independent variables: commuting time to work: up to 30 minutes, 31 to 60 minutes, 61 to 120 minutes, and more than 120 minutes; age: 18 to 59 years of age (adult) and over 60 years of age (elderly); sex: female and male; race: yellow, white, brown, black, and indigenous; education: basic education (incomplete elementary school, complete and incomplete high school, and incomplete higher education), complete higher education and post-graduate studies (complete and incomplete Doctorate, complete and incomplete

Chart 1. Guiding acts for organization of work during the COVID-19 pandemic.

Publication	No.	Content	Date
Ordinance	188	Declares a Public Health Emergency of National Importance (ESPIN) due to the Human Infection with the new Coronavirus (2019-nCoV)[6]	03/02/2020
Ordinance	356	Provides for the regulation and implementation of the provisions of Law No. 13,979, of February 6, 2020, which establishes measures to deal with the public health emergency of international importance resulting from the coronavirus (COVID-19)[18]	11/03/2020
Normative Instruction	19	Establishes guidelines for bodies and entities of the Civil Personnel System of the Federal Public Administration (SIPEC), regarding protective measures to face the public health emergency of international importance resulting from the coronavirus (COVID-19)[19]	12/03/2020
Normative Instruction	20	Amends Normative Instruction No. 19, of March 12, 2020, which establishes guidelines for the bodies and entities of the Civil Personnel System of the Federal Public Administration (SIPEC), regarding protective measures to face the public health emergency of international importance arising from the coronavirus (COVID-19)[20]	13/03/2020
Normative Instruction	21	Amends Normative Instruction No. 19, of March 12, 2020, which establishes guidelines for the bodies and entities of the Civil Personnel System of the Federal Public Administration (SIPEC), regarding protective measures to face the public health emergency of international importance arising from the coronavirus (COVID-19)[21]	16/03/2020
Official Letter	32/2020/ SE/GAB/SE/MS	General guidelines and basic care to reduce the risk of contagion from the coronavirus (COVID-19)[14]	16/03/2020
Official Letter	34/2020/ SE/GAB/SE/MS	Complementation of the general guidelines and basic care to reduce the risks of contagion of the coronavirus (COVID-19)[23]	19/03/2020
Official Letter	971/2020/ME	Survey of the number of servers not physically present in the workplace when facing the public health emergency (COVID-19). MINISTRY OF ECONOMY[24]	19/03/2020
Official Letter	46/2020/ SE/GAB/SE/MS	Extension of the deadline and maintenance of general guidelines and basic care to reduce the risks of contagion of the coronavirus (COVID-19). Office of the Executive Secretariat[25]	13/04/2020
Ordinance	2.789	Provides for protective measures to deal with the public health emergency of international importance resulting from the Coronavirus (COVID-19), within the scope of the units of the Ministry of Health in the Federal District and in the States[26]	14/10/2020
Ordinance	GM/MS 3.190	Establishes the COVID-19 Crisis Office and amends Ordinance No. 188/GM/MS, of February 3, 2020, to provide for the Emergency Operations Center for the new Coronavirus (COE COVID-19)[16]	26/11/2020
Decree	10.697	Amends Decree No. 9,795, of May 17, 2019, to create the Extraordinary Secretariat to Combat COVID-19 and rearranges and transforms positions into commissions and functions of trust[17]	10/05/2021
Manual	3rd ed. Electronic version	National Contingency Plan for Human Infection by the new Coronavirus COVID-19 - Center for Emergency Operations in Public Health COE COVID-19[27]	2021
Official Letter	11/2022/ SE/GAB/SE/MS	Maintenance of general guidelines and basic care to reduce the risk of contagion from COVID-19[28]	25/01/2022
Ordinance	GM/MS 913	Declares the end of the Public Health Emergency of National Importance (ESPIN) due to human infection with the new coronavirus (2019-nCoV) and revokes Ordinance GM/MS No. 188, of February 3, 2020[15]	22/04/2022
Normative Instruction	SGP/SEDGG/ ME 36	Establishes the return to work in person for servers and public employees of the bodies and entities of the Civil Personnel System of the Federal Public Administration (SIPEC)[29]	05/05/2022

Source: Ordinances, decrees, official letters and normative instructions from the Ministry of Health[6-20].

Master's, post-doctoral, and postgraduate/specialization), income: <2 SM (Minimum Wage) (up to R$ 3,300), between 2 to 5 SM (R$ 3,301 to R$ 5,500), between 5 and 10 SM (R$ 5,501 to R$ 11,000), and >10 SM (more than R$ 11,000); Body Mass Index (BMI): adequate (eutrophic) and overweight (overweight and obesity); mental health: good, very good, fair, and poor; physical health: good, very good, fair and poor; presence of disease: yes and no; health plan: yes and no; performance of physical activity: yes and no; alcohol consumption: yes and no; smoker (yes and no); how your work was affected by the coronavirus pandemic: decrease in workload, increase in workload, difficulty in handling technological tools, emotional aspects, inadequacy of remote work conditions, was not affected, and other aspects. In this last question, workers could select more than one answer option.

Statistical analyses were performed using the STATA software, version 14.0. As for the descriptive analyses, quantitative variables were described in frequencies, and qualitative variables in prevalence. For associations, the chi-square test was used and a 5% significance level was considered for the analyses.

To evaluate the associations of interest controlled by possible confounding variables, the Poisson multiple regression model was applied. For this, variables that had a p-value of less than 0.20 in the univariate analysis were included, and those that were statistically significant ($p<0.05$) remained in the final model, when adjusted for the other variables.

The ethical precepts of Resolution No. 466/2012, of the National Health Council, which regulates research with human beings, along with this study, received approval from the National Research Ethics Committee (CAAE: 43628921.2.0000.0008). All participants received information about the nature and objectives of the study, with the signing of the Free and Informed Consent Form (FICF) before applying the questionnaires.

Results and discussion

A total of 821 Ministry of Health workers were interviewed; 67.6% were female, 53.3% declared themselves white, 66.7% had a postgraduate degree, and 38.7% reported an income between 5 and 10 SM, as shown in Table 1.

For 81.8% of the participating workers, the pandemic affected their work, with 28.4% reporting that their mental health was fair or poor; 26.5% reporting regular or poor when asked about their physical health; 68.9% took up to 60 minutes to travel to the workplace, 67.4% practiced some form of physical activity, and 59.1% were overweight (overweight or obese) when classified according to BMI; 65.4% reported not having any disease and 69.2% reported having health insurance. More details about the profile of the interviewees can be found in Table 1.

Table 2 presents the prevalence and associations considering work affected by the pandemic as a dependent variable. After analysis controlled for possible confounding variables, mental health ($p<0.005$) and education ($p=0.028$) continued to be associated with work affected by the pandemic.

There is an association of work affected by the pandemic among workers with higher education. As in other labor sectors, it was found that women have their work more affected by the pandemic than men, increasing the probability by 1.09-fold if female, influencing close to 67.60% of the surveyed data. Different studies point to the overlapping of care tasks with children and other dependent people, especially with the closure of schools and early childhood education centers[22]. Among the most striking and perverse consequences of the pandemic is the increase in domestic violence; therefore, telecommuting can aggravate a pre-existing problem, perhaps with different characteristics[23].

There was also an association between self-assessed mental health and work affected by COVID-19; more than 90% of the workers who considered their mental health to be fair or poor had their work affected by the pandemic. Graph 1 shows the answers given by Ministry of Health workers regarding how their work was affected by the COVID-19 pandemic.

Increased workload was mentioned by 40.1% of the workers who participated in this study. Much of the research that confirms this trend of increasing workload is carried out with "frontline" workers, especially referring to greater contact with patients with COVID-19 and work overload due to the removal of other workers[24].

Among the workers who answered the survey, the vast majority reported working at the Headquarters of the Ministry of Health in Brasília and at the State Superintendencies of the Ministry of Health (SEMS) in the States, that is, they are management workers. There is an absence of studies addressing the health of these workers, as most of the research carried out refers to health

Table 1. Sociodemographic characteristics of the workers interviewed. Ministry of Health, 2021.

Variables	N (%)
Sex	
Female	555 (67.6)
Male	266 (32.4)
Race/color	
Yellow	20 (2.4)
White	437 (53.3)
Indigenous	6 (0.7)
Brown	287 (35.0)
Black	71 (8.6)
Education	
Basic education	79 (9.6)
Higher education	194 (23.7)
Post-graduate	548 (66.7)
Age	
Adult	749 (91.2)
Elderly	72 (8.8)
Income	
<2 SM	170 (20.7)
2-5 SM	222 (27.0)
5-10 SM	318 (38.7)
>10 SM	111(13.6)
Work affected by the pandemic	
Yes	672 (81.8)
No	149 (18.2)
Illness	
Yes	537 (65.4)
No	284 (34.6)
Health Plan	
Yes	568 (69.2)
No	253 (30.8)
Consumption of alcoholic beverage	
Yes	530 (64.5)
No	291 (35.5)
Smoker	
Yes	50 (6.1)
No	771 (93.9)
Time for commute to work/ minutes	
Up to 30	267 (32.5)
31 to 60	299 (36.4)
61 to 120	177 (21.6)
More than 120	78 (9.5)
Classified by BMI weight	
Adequate	336 (40.9)
Excessive	485 (59.1)
Practice of physical activity	
Yes	553 (67.4)
No	268 (32.6)
Mental health	
Good	429 (52.2)
Very good	159 (19.4)
Regular	188 (22.9)
Poor	45 (5.5)
Physical health	
Good	442 (53.8)
Very good	162 (19.7)
Regular	195 (23.8)
Poor	22 (2.7)

it continues

Table 1. Sociodemographic characteristics of the workers interviewed. Ministry of Health, 2021.

Source: Survey questionnaires: "Survey of socioeconomic and epidemiological factors associated with the health conditions of Ministry of Health workers", Brazil, 2021.

workers considered to be in the "frontline" in the fight against the pandemic.

Regarding mental health, 55% of the workers reported that emotional aspects changed their work in the context of COVID-19, which was the most prevalent response among all other situations. Benevides *et al.*[23] consider that it is possible that part of these effects may be related to situations of social isolation, especially in cases of remote work and telecommuting.

Preliminary data from a survey carried out with health workers in the Federal District between December 2020 and April 2021, with the participation of 831 health professionals, also point to the presence of variable symptoms (from mild to extremely severe), according to the DASS-21 Scale, in the following disorders: stress (65%), anxiety (61.6%), and depression (61.5%)[25] during the pandemic period. In this sense, it is important to mention that the manifestations of mental suffering due to the various situations linked to work in health were enhanced with the advent of the COVID-19 pandemic. Pavani *et al.*[26] by contrast, pointed out that the situations that health workers experience in periods of crises, disasters, and epidemics are challenging and often have different relationships than other segments of society, thus intensifying these manifestations.

In June 2020, 24.7% of public sector workers were working remotely[27]. The federal gov-

Table 2. Prevalences and associations by work affected by the pandemic. Ministry of Health, 2021.

Variables	Work affected by the pandemic N (%)		Total	P-value*
	Yes	No		
Commute time				
Up to 30	210 (78.65)	57 (21.35)	267 (100)	0.249
31 to 60	254 (84.95)	45 (15.05)	299 (100)	
61 to 120	146 (82.49)	31 (17.51)	177 (100)	
Mais de 120	62 (79.49)	16 (20.51)	78 (100)	
Sex				
Female	467 (84.14)	88 (15.86)	555 (100)	0.014
Male	205 (77.07)	61 (22.93)	266 (100)	
Race/color				
Yellow	16 (80.00)	4 (20.00)	20 (100)	0.752
White	357 (81.69)	80 (18.31)	437 (100)	
Indigenous	6 (100)	0	6 (100)	
Brown	237 (82.58)	50 (17.42)	287 (100)	
Black	56 (78.87)	15 (21.13)	71 (100)	
Education				
Basic education	56 (70.89)	23 (29.11)	79 (100)	0.004**
Higher education	152 (78.35)	42 (21.65)	194 (100)	
Post-graduate	464 (84.67)	84 (15.33)	548 (100)	
Income				
<2 SM	142 (83.53)	28 (16.47)	170 (100)	0.851
2-5 SM	182 (81.98)	40 (18.02)	222 (100)	
5-10 SM	256 (80.50)	62 (19.50)	318 (100)	
>10 SM	92 (82.88)	19 (17.12)	111 (100)	
Physical health				
Good	359 (81.22)	83 (18.78)	442 (100)	0.410
Very good	128 (79.01)	34 (20.99)	162 (100)	
Regular	167 (85.64)	28 (14.66)	195 (100)	
Poor	18 (81.82)	4 (18.18)	22 (100)	
Mental Health				
Good	344 (80.19)	85 (19.81)	429 (100)	<0.001**
Very good	117 (73.58)	42 (26.42)	159 (100)	
Regular	170 (90.43)	18 (9.57)	188 (100)	
Poor	41 (91.11)	4 (8.89)	45 (100)	
Disease				
Yes	449 (83.61)	88 (16.39)	537 (100)	0.075
No	223 (78.52)	61 (21.48)	284 (100)	
Smoker				
Yes	43 (86.00)	7 (14.00)	50 (100)	0.432
No	629 (81.58)	142 (18.42)	771 (100)	

it continues

ernment instituted remote work early-on as a strategy to reduce the movement and interaction of people. However, there was no training of workers or assessment of their ability to carry out work activities at home. Only in 2021 was a booklet launched guiding ergonomic care related to remote and home office work[28].

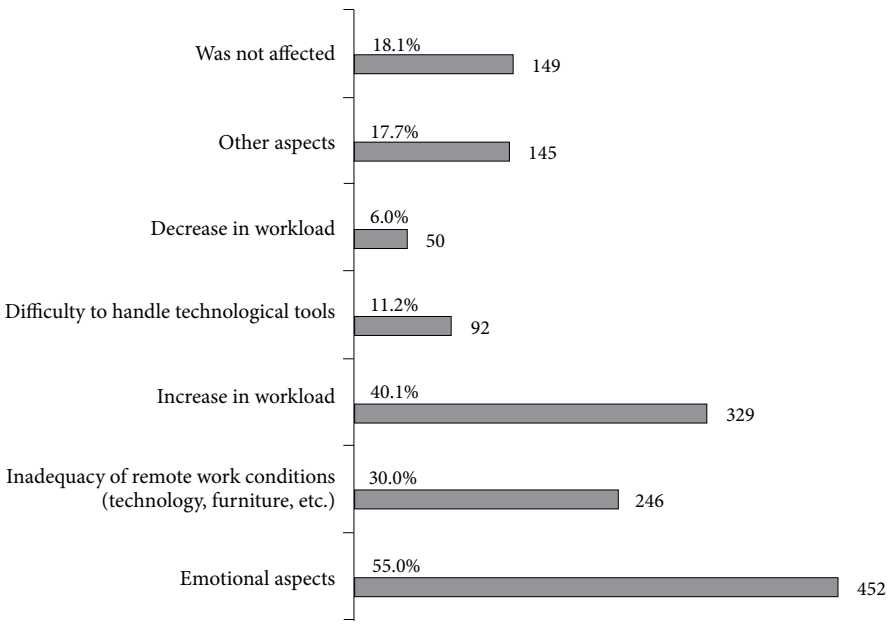
This situation directly interfered with the health of Ministry of Health workers. Among the participants in this study, 29.8% claimed to have inadequate conditions in relation to remote work and 11.2% reported difficulty in handling technological tools. In the context of federal management, in July 2020, Normative Instruction No.

Table 2. Prevalences and associations by work affected by the pandemic. Ministry of Health, 2021.

Variables	Work affected by the pandemic N (%)		Total	P-value*
	Yes	No		
Drinks				
Yes	438 (82.64)	92 (17.36)	530 (100)	0.428
No	234 (80.41)	57 (19.59)	291 (100)	
Practice of physical activity				
Yes	450 (81.37)	103 (18.63)	553 (100)	0.61
No	222 (82.84)	46 (17.16)	268 (100)	
Age				
Adult	616 (82.24)	133 (17.76)	749 (100)	0.348
Elderly	56 (77.78)	16 (22.22)	72 (100)	
Classified by BMI weight				
Adequate	279 (83.04)	57 (16.96)	336 (100)	0.464
Excessive	393 (81.02)	92 (18.97)	485 (100)	
Health Plan				
Yes	479 (84.33)	89 (16.67)	568 (100)	0.006
No	193 (76.28)	60 (23.72)	253 (100)	

*Chi-square test. **Associated variable after analysis controlled for possible confounding variables.

Source: "Survey of socioeconomic and epidemiological factors associated with the health conditions of Ministry of Health workers", Brazil, 2021.



Graph 1. Work situations affected by the COVID-19 pandemic according to Ministry of Health workers, 2021.

Source: "Survey of socioeconomic and epidemiological factors associated with the health conditions of Ministry of Health workers", Brazil, 2021.

65 was issued, which establishes guidelines, criteria, and general procedures to be observed by the bodies and entities that are part of the Civil Personnel System of the Federal Administration (*Sistema de Pessoal Civil da Administração Federal* - SIPEC) regarding the implementation

of the Management Program, which guides the possibilities for public bodies to adhere to partial and full telework modalities. In this sense, the research suggests that it would be necessary to evaluate both the conditions for carrying out remote work by the servers, considering issues of ergonomics and technological tools, as well as training for the use of technological tools for telework.

Digital literacy refers to the ability to understand and use digital resources and devices, software, and the internet itself. In the Draft Global Strategy on Digital Health 2020-2025[29], digital health literacy is considered to be one of the digital determinants of health. The fourth strategic objective "advocating for people-centered health systems facilitated through digital health" considers the adoption and use of digital health technologies to expand and strengthen the delivery of health services. This approach encompasses not only patients, families, and communities, but also healthcare professionals, who must be prepared to implement or use digital health technologies in their work[30].

PAHO includes digital literacy as a component of the "Inclusive Digital Health" principle, which covers the most vulnerable populations, as well as people and population groups who are not digitally literate. In all remote work where public servants must be available to provide services to the population, this is an important public policy issue with regard to both the digital literacy of employees and the population that needs to be able to receive these services in a non-face-to-face manner and to which public administration workers should be able to contribute in the most appropriate manner possible[31].

Araújo and Lua[32] reflect on the transition to remote work, which has generated additional costs for workers, such as the purchase of computers and monitors, the contracting of internet and telecommunications systems, in addition to the organizing of work spaces, a difficult situation and sometimes unfeasible for a significant part of the workers. They also point out that, in addition to regulation, the change to telework should involve investments in technical training and skills development for the new demands, the redesigning and adaptation of activities to the new model, and well-adjusted rules on working hours.

One of the limits of this study refers to the cross-sectional design, which makes it difficult to infer causality in the associations found. Another is related to the possible susceptibility to information biases, which would result in some impact on the association measures, with the possibility of underestimating or overestimating the results. To reduce possible confounding variables, the Poisson multiple regression model was applied, as explained in the methodology.

The present study did not assess the number of Ministry of Health workers affected by COVID-19; however, it was observed that there is little research that works along these lines, especially dealing with "management" professionals. Silva *et al.*[33] point out the need to develop actions aimed at worker health surveillance in order to monitor the impacts of COVID-19 on the health of professionals who are in the frontlines of fighting the disease. It highlights the importance of epidemiological bulletins from the various SUS management levels, disclosing information related to the distribution of confirmed cases and deaths according to registered occupations[33]. In any case, the results found bring important contributions to the proposition of actions not only in health protection and promotion, but also in tackling social determinants in health and in reducing the negative effects in pandemic situations.

Final considerations

The findings of this study show the association of work affected by the pandemic with the mental health conditions of workers, as well as an association with education. In addition to these, it showed the relationship of COVID-19 on the work process of the workers who participated in the survey, with the increase in the workload, which especially affected women.

The inadequate conditions of the work environment due to insufficient equipment, access to technologies, or a low digital literacy point to the recommendation of investment in training processes necessary for the development of remote work. Added to the work overload due to the pandemic are the repercussions on the emergence and/or intensification of various manifestations of mental suffering.

The protection of workers' mental health, offering spaces for listening, reception, and health care, is essential, as is the establishment of an adequate and effective program in Worker's and Worker's Health Surveillance, to act not only in health protection and promotion, but also in tackling the social determinants of health.

The scarcity of articles that specifically deal with the repercussions of the COVID-19 pan-

demic on workers in management areas, whether from the Ministry of Health or other public bodies, brings the need for greater reflection on this topic. Investments in research and possibilities for interventions are needed in accordance with the reality of the Brazilian context, which also incorporates health workers who are not directly in the "frontline" of the COVID-19 pandemic, but who are key to the management of the crisis in pandemic times.

Collaborations

E Matielo, E Artmann, MS Costa, MN Meneses and PFA Silva worked on the conception, on the survey and analysis of information, and on the write-up and revision of the manuscript.

References

1. Eyre DW, Lumley SF, O'Donnell D, Campbell M, Sims E, Lawson E, Warren F, James T, Cox S, Howarth A, Doherty G, Hatch SB, Kavanagh J, Chau KK, Fowler PW, Swann J, Volk D, Yang-Turner F, Stoesser N, Matthews PC, Dudareva M, Davies T, Shaw RH, Peto L, Downs LO, Vogt A, Amini A, Young BC, Drennan PG, Mentzer AJ, Skelly DT, Karpe F, Neville MJ, Andersson M, Brent AJ, Jones N, Martins Ferreira L, Christott T, Marsden BD, Hoosdally S, Cornall R, Crook DW, Stuart DI, Screaton G; Oxford University Hospitals Staff Testing Group; Peto TE, Holthof B, O'Donnell AM, Ebner D, Conlon CP, Jeffery K, Walker TM. Differential occupational risks to healthcare workers from SARS-CoV-2 observed during a prospective observational study. *Elife* 2020; 9:e60675.
2. Iversen K, Bundgaard H, Hasselbalch RB, Kristensen JH, Nielsen PB, Pries-Heje M, Knudsen AD, Christensen CE, Fogh K, Norsk JB, Andersen O, Fischer TK, Jensen CAJ, Larsen M, Torp-Pedersen C, Rungby J, Ditlev SB, Hageman I, Møgelvang R, Hother CE, Gybel-Brask M, Sørensen E, Harritshøj L, Folke F, Sten C, Benfield T, Nielsen SD, Ullum H. Risk of COVID-19 in health-care workers in Denmark: an observational cohort study. *Lancet Infect Dis* 2020; 20(12):1401-1408.
3. Oliveira GL, Adalgisa PR. Relações de trabalho e a saúde do trabalhador durante e após a pandemia de COVID-19. *Cad Saude Publica* 2021; 37(3):e00018321.
4. Machado MH, Leonel F. *Texto expõe realidade dos trabalhadores e trabalhadoras da saúde na pandemia* [Internet]. Informe ENSP; 2022 [acessado 2022 jun 25]. Disponível em:_https://informe.ensp.fiocruz.br/noticias/52993.
5. Brasil. Emenda Constitucional nº 95, de 15 de dezembro de 2016. Altera o Ato das Disposições Constitucionais Transitórias, para instituir o Novo Regime Fiscal, e dá outras providências. *Diário Oficial da União*; 2016.
6. Brasil. Portaria nº 188, de 3 de fevereiro de 2020. Declara Emergência em Saúde Pública de importância Nacional (ESPIN) em decorrência da Infecção Humana pelo novo Coronavírus (2019-nCoV). *Diário Oficial da União*; 2020.
7. Brasil. Portaria GM/MS nº 913, de 22 de abril de 2022. Declara o encerramento da Emergência em Saúde Pública de Importância Nacional (ESPIN) em decorrência da infecção humana pelo novo coronavírus (2019-nCoV) e revoga a Portaria GM/MS nº 188, de 3 de fevereiro de 2020. *Diário Oficial da União*; 2022.
8. Brasil. Portaria GM/MS nº 3.190, de 26 de novembro de 2020. Institui o Gabinete de Crise da Covid-19 e altera a Portaria nº 188/GM/MS, de 3 de fevereiro de 2020, para dispor sobre o Centro de Operações de Emergências para o novo Coronavírus (COE Covid-19). *Diário Oficial da União*; 2020.
9. Brasil. Decreto nº 10.697, de 10 de maio de 2021. Altera o Decreto nº 9.795, de 17 de maio de 2019, para criar a Secretaria Extraordinária de Enfrentamento à Covid-19 e remaneja e transforma cargos em comissão e funções de confiança. *Diário Oficial da União*; 2021.
10. Brasil. Portaria nº 356, de 11 de março de 2020. Dispõe sobre a regulamentação e operacionalização do disposto na Lei nº 13.979, de 6 de fevereiro de 2020, que estabelece as medidas para enfrentamento da emergência de saúde pública de importância internacional decorrente do coronavírus (COVID-19). *Diário Oficial da União*; 2020.
11. Brasil. Instrução Normativa nº 19, de 12 de março de 2020. Estabelece orientações aos órgãos e entidades do Sistema de Pessoal Civil da Administração Pública Federal - SIPEC, quanto às medidas de proteção para enfrentamento da emergência de saúde pública de importância internacional decorrente do coronavírus (COVID-19). *Diário Oficial da União*; 2020.
12. Brasil. Instrução Normativa nº 20, de 13 de março de 2020. Altera a Instrução Normativa nº 19, de 12 de março de 2020, que estabelece orientações aos órgãos e entidades do Sistema de Pessoal Civil da Administração Pública Federal - SIPEC, quanto às medidas de proteção para enfrentamento da emergência de saúde pública de importância internacional decorrente do coronavírus (COVID-19). *Diário Oficial da União*; 2020.
13. Brasil. Instrução Normativa nº 21, de 16 de março de 2020. Altera a Instrução Normativa nº 19, de 12 de março de 2020, que estabelece orientações aos órgãos e entidades do Sistema de Pessoal Civil da Administração Pública Federal - SIPEC, quanto às medidas de proteção para enfrentamento da emergência de saúde pública de importância internacional decorrente do coronavírus (COVID-19). *Diário Oficial da União*; 2020.
14. Brasil. Ministério da Saúde (MS). Gabinete da Secretaria Executiva. *Ofício Circular nº 32/2020/SE/GAB/SE/MS. Orientações gerais e cuidados básicos para diminuir os riscos de contágio do coronavírus (COVID-19)*. Brasília: MS; 2020.
15. Brasil. Ministério da Saúde (MS). Gabinete da Secretaria Executiva. *Ofício Circular nº 34/2020/SE/GAB/SE/MS. Complementação às orientações gerais e cuidados básicos para diminuir os riscos de contágio do coronavírus (COVID-19)*. Brasília: MS; 2020.
16. Brasil. Ofício Circular nº 971/2020/ME. Levantamento do quantitativo de servidores não presentes fisicamente em local de trabalho diante do enfrentamento da emergência de saúde pública (COVID-19). Gabinete da Secretaria Executiva. Brasília, 19 de março de 2020.

17. Brasil. Ministério da Economia (ME). Gabinete da Secretaria Executiva. *Ofício Circular nº 46/2020/SE/GAB/SE/MS. Prorrogação do prazo e manutenção das orientações gerais e cuidados básicos para diminuir os riscos de contágio do coronavírus (COVID-19)*. Brasília: ME; 2020.
18. Brasil. Portaria nº 2.789, de 14 de outubro de 2020. Dispõe sobre as medidas de proteção para enfrentamento da emergência de saúde pública de importância internacional decorrente do Coronavírus (Covid-19), no âmbito das unidades do Ministério da Saúde no Distrito Federal e nos Estados. *Diário Oficial da União*; 2020.
19. Brasil. Ministério da Saúde (MS). Plano de Contingência Nacional para Infecção Humana pelo novo Coronavírus Covid-19 – Centro de Operações de Emergências em Saúde Pública COE COVID-19. Brasília: MS; 2021.
20. Brasil. Ministério da Saúde (MS). Gabinete da Secretaria Executiva. *Ofício Circular nº 11/2022/SE/GAB/SE/MS. Manutenção das orientações gerais e cuidados básicos para diminuir o risco de contágio da COVID-19*. Brasília: MS; 2022.
21. Brasil. Ministério da Economia (ME). Instrução Normativa SGP/SEDGG/ME nº 36, de 5 de maio de 2022. Estabelece o retorno ao trabalho em modo presencial dos servidores e empregados públicos dos órgãos e entidades do Sistema de Pessoal Civil da Administração Pública Federal - SIPEC. *Diário Oficial da União*; 2022.
22. Organización Internacional del Trabajo. *Nota técnica: Serie Panorama Laboral em América Latina y el Caribe 2022. América Latina y Caribe: Políticas de igualdad de género y mercado de trabajo durante la pandemia* [Internet]. OITAmericas; 2022 [acessado 2022 jun 25]. Disponible en: https://www.ilo.org/wcmsp5/groups/public/---americas/---ro-lima/documents/publication/wcms_838520.pdf.
23. Benavides FG, Amable M, Cornelio C, Vives A, Milián LC, Barraza D, Bernal D, Silva-Penaherrera M, Delclos J. O futuro do trabalho após a COVID-19: o papel incerto do teletrabalho no domicílio. *Rev Bras Saude Ocup* 2021; 46:e31.
24. Soares JP, Oliveira NHS, Mendes TMC, Ribeiro SS, Castro JL. Fatores associados ao burnout em profissionais de saúde durante a pandemia de Covid-19: revisão integrativa. *Saude Debate* 2022; 46(n. esp. 1):385-398.
25. Loureiro JR, Passos MFD, Mazaro RB, Nascimento DDG. *Cuidando-se: cartilha dos serviços psicológicos ofertados aos trabalhadores da saúde do Distrito Federal*. Brasília: Fiocruz; 2022.
26. Pavani FM, Silva AB, Olschowsky A, Wetzel C, Nunes CK, Souza LB. Covid-19 e as repercussões na saúde mental: estudo de revisão narrativa de literatura. *Rev Gaucha Enferm* 2021; 42(n. esp.):e20200188.
27. Góes GS, Martins FS, Nascimento JA. *Nota técnica: O teletrabalho no setor público e privado na pandemia: potencial versus evolução e desagregação do efetivo*. Rio de Janeiro: Ipea; 2020.
28. Brasil. Ministério da Saúde (MS). Secretaria-Executiva. Subsecretaria de Assuntos Administrativos. Guia de orientações ergonômicas para o trabalho remoto. Brasília: MS; 2021.
29. World Health Organization (WHO). *Proyecto de estrategia mundial sobre salud digital 2020-2025* [Internet]. WHO; 2020 [acessado 2021 abr 3]. Disponível em: https://cdn.who.int/media/docs/defaultsource/documents/gs4dhdaa2a9f352b0445bafbc79ca799dce4d_02adc66d-800b-4eb5-82d4f0bc778a5a2c.pdf?sfvrsn=f112ede5_68.
30. Murray CJL, Alamro NMS, Hwang H, Lee U. Digital public health and COVID-19. *Lancet Public Health* 2020; 5(9):e469-e470.
31. Organización Panamericana de la Salud (OPAS). *Ocho principios rectores de la transformación digital del sector de la salud. Un llamado a la acción panamericana*. Washington, D.C.: OPAS; 2021.
32. Araújo TM, Lua I. O trabalho mudou-se para casa: trabalho remoto no contexto da pandemia de COVID-19. *Rev Bras Saude Ocup* 2021; 46:e27.
33. Silva LS, Machado EL, Oliveira HN, Ribeiro AP. Condições de trabalho e falta de informações sobre o impacto da COVID-19 entre trabalhadores da saúde. *Rev Bras Saude Ocup* 2020; 45:e24.

Article submitted 30/06/2022
Approved 01/06/2023
Final version submitted 28/06/2023

Chief editors: Romeu Gomes, Antônio Augusto Moura da Silva