

Transformations in the world of healthcare work: workers and future challenges

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Abstract This article addresses the world of healthcare work, especially in the Brazilian Unified Healthcare System (SUS) in the context of the COVID-19 pandemic in Brazil. This study used data from the following surveys: “Working conditions of health professionals in the context of COVID-19 in Brazil” and “The Invisible health workers: working conditions and mental health in the context of COVID-19 in Brazil”. Data analysis proves that the pandemic highlighted existing structural problems within SUS, involving the issue of healthcare workforce (HWF) management, which can be interpreted as another reflection of the socioeconomic inequalities that already exist in the country. This article highlights: the reduced provision of permanent education, the regulation of hybrid care, precariousness, a lack of protection in the work environment, as well as fragile biosecurity leading to tragic rates of illness and death of health workers. Our study concludes by showing the importance of formulating public policies in the scope of education and work management in SUS that ensure the discussion on hybrid care as a new way of acting without losing quality, together with the need to review issues related to permanent education, protection, valuation, and reduction of inequalities pointed out among the professional contingents analyzed in this article.

Keywords Invisible Health Workers, Health Professionals, Health Education, World of Healthcare Work, COVID-19 pandemic

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Introduction

The COVID-19 pandemic has left deep political, economic, and social scars in the global scenario and has accentuated existing social inequalities in a globalized world¹. Some of these scars have had impacts on private or public healthcare services and, particularly, on healthcare professionals (HP), as demonstrated in a report produced by the Qatar Foundation in cooperation with the World Health Organization (WHO) in October 2022, during the World Innovation Summit for Health (WISH)².

Thus, the pandemic scenario brought forth the need to reopen discussions about healthcare work and its transformations to enable different countries, including Brazil, to be better prepared to deal with future pandemics².

In addition, in tune with scientific and technological transformations in the world, the Unified Health System (SUS) Resolution CNS No. 287/1998³ defined 14 health professions as core to the composition of multidisciplinary teams, incorporating specialized technicians and assistants.

An estimate in 2020 indicated that Brazil had a population of 211.7 million people (IBGE, 2017). To provide healthcare for this population in the national territory, the country has a complex and well-structured health system with over 329,854 healthcare facilities, outpatient clinics, and/or hospitals, and 447,510 hospital beds, which absorb over 3.5 million HPs, including graduate professionals, technicians, assistants, and support personnel⁴.

In Brazil, COVID-19 highlighted the work of this group of professionals, technicians, assistants, and support staff who faced the pandemic, providing assistance to the population. They also experienced the tragic reality of the high number of co-workers who were contaminated and died of COVID-19⁴.

However, for three decades, SUS has suffered the consequences of the national political scenario and endured important transformations that affected the job market as a whole, with impacts not only on the shape of healthcare teams, but also on employment relationships and insertion into the healthcare system. This article focuses on analyzing these transformations in the healthcare job market, especially in the pandemic scenario.

Method

This is a reflexive text on the transformations that occurred in the healthcare job market, characterizing them in light of the empirical findings of two studies: "Healthcare professionals' work conditions in the COVID-19 scenario in Brazil"⁵ and "Invisible healthcare workers: work conditions and mental health in the COVID-19 scenario in Brazil"⁶. These studies provide a detailed diagnosis of the conditions of healthcare professionals and workers in the pandemic scenario, which gave origin to this special issue of RC&CS, by cross-sectional studies whose target populations consist of HPs, those with college degrees, and invisible healthcare workers (IHP), a term that, in this work, refers to all those mid-level and auxiliary-level workers who execute relevant activities in the healthcare system but, nevertheless, are invisible to the work process (Chart 1).

Quantitative and qualitative approaches, with national coverage, allowed for a better understanding of regional realities by non-probabilistic sampling using the snowball method and social media for the key actors, such as corporate leaders, unions, and professional groups involved, placing these subjects that constitute the universe of each study within easy access and reach.

Given the restrictions imposed by the pandemic moment, it should be noted that the data collection instrument was tested using online contacts with workers in the different professional categories that acted in the fight against COVID-19. These workers completed the questionnaires and offered improvement suggestions, contributing to their final format. The field research was also conducted exclusively online, using the internet, social media, and institutional contact information provided by national and regional organizations.

From the initial contact, participants were encouraged to publicize and forward the questionnaire, using either a direct link or a WhatsApp link, to other workers who were active on the frontline of the fight against COVID-19.

Online completion of the questionnaire by the study subject was voluntary, and all research ethics principles were observed. The informed consent form, available at the start of the questionnaire in a downloadable file, states the voluntary nature of the participation, with no constraints on individuals, anonymous answers, and no need for direct or indirect identification. After the ethical issues had been presented, participants were required to confirm their under-

Chart 1. General Survey Data - Brazil.

Studies	
Work conditions of healthcare professionals in the context of COVID-19 in Brazil	Invisible healthcare workers: work conditions and mental health in the context of COVID-19 in Brazil
Universe	
Doctor; Nurse; Physical Therapist/Occupational Therapist; Dental surgeon; Biomedic; Pharmaceutical/Biochemical; Psychologist; Social Worker; Nutritionist; Speech Therapist; Biologist; Veterinarian; Hospital Administrator; Physical educator; Engineer (occupational safety, sanitarian); Undergraduate student (medicine, nursing, etc.). (n=15,132)	Nursing Tech/Aide; Oral Health/Dental Prosthesis Tech/Aide; Pharmacy Tech/Aide; Radiology Technologist/Technician/Aide.; Technician in Orthopedic Immobilizations/Plaster; Technician in Occupational Safety, Tech. in Health Surveillance; CHA, ECA, Sanitary Visitor and the like); Indigenous Health/Sanitation Agents; Stretcher bearer; Ambulance driver; Morticians, Staff of: Funeral homes and cemeteries; hospital kitchen; administrative activities; operational activities; cleanliness and conservation; general maintenance. (n=21,480)
Coverage	
5 regions, 27 Federation Units and more than 2,000 municipalities	5 regions, 27 Federation Units and 2,395 municipalities
Institution that conducted the study	
Centro de Estudos Estratégicos (CEE-Fiocruz) e Escola Nacional de Saúde Pública Sergio Arouca (ENSP/Fiocruz) (Research: Health Professionals)	Centro de Estudos Estratégicos (CEE-Fiocruz) e Escola Nacional de Saúde Pública Sergio Arouca (ENSP/Fiocruz) (Subproject Invisible Workers)
Funding	
Fiocruz Program to Foster Innovation - Inova Fiocruz	Program of Public Policies and Models of Health Care and Management (PMA) of the Vice-Presidency of Research and Biological Collections (VPPCB) of Fiocruz
Research Ethics Committee (REC)	
ENSP/Fiocruz - CAAE: 32351620.1.0000.524 (Research: Health Professionals)	ENSP/Fiocruz - CAAE: 32351620.1.0000.524 (Subproject Invisible Workers)
Coordination	
Maria Helena Machado (general coordinator) Eleny Guimarães-Teixeira (adjunct coordinator)	Maria Helena Machado (general coordinator) Antônio Vieira Machado (adjunct coordinator) João Batista Militão (adjunct coordinator)
Period in which the study was conducted	
2020/2021	2021/2022
Methodology	
<ul style="list-style-type: none"> • Fieldwork performed entirely online; • Non-probabilistic sampling method; • Chosen method: snowball; • Data collection through an online questionnaire prepared on the RedCap platform (Research Electronic Data Capture); • Data processing via Excel and IBM SPSS Statistics 21 	

Source: Research "Working Conditions of Health Professionals in the Context of COVID-19 in Brazil" - ENSP-CEE/Fiocruz, 2020/2021, and Research "Invisible health workers: working conditions and mental health in the context of COVID-19 in Brazil" - ENSP-CEE/Fiocruz, 2021/2022.

standing and acceptance of the informed consent form before they were granted access to the questionnaire.

The research projects were approved under N° 4.081.914 CAAE N° 32351620.1.0000.5240.

The interviews involved 15,163 HPs in all graduate-level jobs and 21,480 IHPs, covering over 60 technical and auxiliary-level jobs (Chart 1). Together, the two studies added 36,612 re-

spondents, allowing for nationwide and regional coverage as well as a better understanding of the actual work conditions for the studied groups. Both studies included participants from all regions, all states, and the Federal District, reaching over 2,200 cities.

The proportion among the different professional categories involved in the studies, as well as the frequency of responses per region or state,

were monitored by weekly reports issued by the information technology team to ensure the professional categories and regions were well represented and proportional.

The research database consisted of the two studies' sets of questionnaires captured using the Research Electronic Data Capture (RedCap) platform on Fiocruz's Scientific and Technological Communication and Information Institute (*Instituto de Comunicação e Informação Científica e Tecnológica em Saúde - ICICT*) server.

After the field survey had been completed, the database was built and exported. For the analysis, the tools available in IBM SPSS Statistics 21 were used to select data and generate tables (n=15,132 and n=21,480) to inform the analyses provided in this document, presenting absolute (n) and relative (%) frequencies, in Excel and SPSS formats. From the tabular plans, tables, charts, and graphs were generated to be analyzed by the research team of the different studies included in several articles in this special issue.

The professional profile of unequal and hierarchical work environments

Healthcare professionals

The HP study outlined these professionals' sociodemographic profile. HPs represent nearly 2 million in the 14 National Health Council accredited professions, as well as other non-health-related professions that are involved in the healthcare teams (Chart 2), and have the following sociodemographic shape: the group is a *homogenous group* regarding education – all have a college degree, and most of whom have participated in degree or nondegree graduate programs, which enable them to work in specialized areas; *they have technical autonomy*, they have the ability to technically direct their teams, and they enjoy prestige, recognition, and a good status⁵; they are a *group of women* (77.6%); as well as a *young group*, as 82.4% are under 50 years of age and 17.6% are over 51 years of age. The group is also mostly *white* – as 57.7% are white, 39.9% are black or brown race, and only 0.2% are indigenous. Notably, 9.2% live and work in major cities and metropolitan areas. The lack of training during the pandemic affected 46.2% of the group, while 17.7% tried to find information on their own.

The *work environment* is hostile and unwelcoming, as described by HP, as a little over half of

them (55.9%) felt protected against COVID-19, 23.9% were contaminated and had no COVID-19 tests at their workplace, and 59.6% received no institutional support while ill.

Invisible healthcare workers

Over 2 million workers in 60 job areas work in different healthcare sectors, usually silently, made invisible by managers, line supervisors, healthcare teams, and users who seek care and assistance (Chart 2).

The IHP profile has different characteristics from those of the HP and presents the following sociodemographic features: they are a *heterogeneous group* in terms of education – with notable percentages of technical-level education (45.7% of high school or middle school graduates) and college education (47.7% of college students or graduates), which demonstrates a clear trend in increased education levels for this group. However, they still perform assistance and support tasks in the healthcare environment, following orders from their superiors (HP), who are the technical managers for the work process. Therefore, IHPs have no autonomy to perform their activities⁶. This is a *mostly female group* (72.5%) as well as a *young group* – 83.2% are up to 50 years of age, while only 15.1% are 51 years of age or more. This group consists mostly of *blacks and brown people* (59%), and only a little over 1/3 (36.6%) are white. Among IHPs, 0.5% of indigenous people are registered (twice the number registered among HPs). Half of them work in major cities and metropolitan areas (52.6%); however, they tend to be more present in smaller cities (42.2%) than are HPs. The lack of training during the pandemic is even more evident in this group; that is, only 43% received some type of training, as compared to 54.4% who had no training or sought help on the internet/from co-workers.

The *work environment* is still *hostile and unwelcoming* for IHPs, as more than half (52.9%) did not feel protected in the work environment against the pandemic, which is reinforced by the fact that 41% were contaminated, the non-availability of COVID-19 testing at work, and the fact that 66.8% reported that they did not receive institutional support when they became infected.

Therefore, although HPs and IHPs work in the same healthcare environments, they are different groups with strong hierarchical organization of work processes, which create unequal worlds and reinforce the social invisibility of IHPs.

Chart 2. General characteristics of invisible health professionals and workers - Brazil. (n=15,132 and n=21,480).

Variables	Healthcare professionals	Invisible Workers
Sex	Male	22.1
	Female	77.6
	NR	0.2
Age range	Up to 35 years	38.4
	36-50 years	44.0
	51-60 years	13.4
	61 years or more	4.2
	NR	0.1
Color or race	White	57.7
	Black + Brown	39.9
	Yellow	2.0
	Indigenous	0.2
	NR	0.2
Level of education	Incomplete elementary	0.0
	Complete elementary	0.0
	Incomplete secondary school	0.0
	Complete secondary school	0.0
	Incomplete higher education	0.0
	Complete higher education	100.0
	NR	0.0
Workplace	Capital and Metropolitan Region	59.2
	Countryside	36.7
	NR	4.2
Training during pandemic	Yes	53.8
	By own initiative	17.7
	No	27.6
	NR	0.9
Feeling of protection against COVID-19	Yes	55.9
	No	43.2
	NR	0.9
Contamination by coronavírus	Yes	23.9
	No	74.6
	NR	1.5
Institutional support during the pandemic	Yes	38.3
	No	59.6
	NR	2.1

Source: Research "Working Conditions of Health Professionals in the Context of COVID-19 in Brazil" - ENSP-CEE/Fiocruz, 2020/2021, and Research "Invisible health workers: working conditions and mental health in the context of COVID-19 in Brazil" - ENSP-CEE/Fiocruz, 2021/2022.

Health education and the pandemic

The healthcare workforce (HCW) is a priority topic for the WHO. Their document, "Strategy on Human Resources for Universal Access to Health and Universal Health Coverage"⁷, states that HP availability, accessibility, pertinence, relevance, and competences are key factors in achieving the

strategy for universal access to health and universal health coverage objectives, as well as in the 2030 Sustainable Development Agenda. These same guidelines are recorded in the Kampala Declaration (2008)⁸ and the Recife Declaration (2013, Global Health Workforce Alliance)⁹.

The Human Resource for Health Observatory network in the Americas, created in 1999, is a co-

operation initiative among countries to produce information and knowledge to support the formulation and implementation of public policies, as well as to share experiences between countries. In Brazil, this initiative became relevant with the creation of the Observatory Network, which has 23 stations¹⁰.

Professional training and health care mediated by technologies - hybrid care

The pandemic crisis that the world went through in Brazil brought to light even greater needs, adding new actors to the scenario about which little had been thought in the past, among which some clear examples include administrative technicians, ambulance drivers, stretcher-bearers, and even gravediggers.

In a hierarchical structure such as the world of healthcare work, this oblivion took a heavy toll at a time when the lack of preparation to deal with the health emergency affected the entire team and the impacts of fake news on the daily work allowed for the rise of post-truth, established the decay of universal truths, promoted the rise of doubt, and distorted the relationship with knowledge¹¹.

Studies carried out by Fiocruz on working conditions and mental health^{5,6} demonstrate wide, diverse, and unequal groups of HPs and IHCs, further exposing inequalities in the pandemic. In a scenario with lockdowns and the health system at maximum overload, treatments were postponed, and new chronic conditions emerged, requiring an emergency reorganization of care. Thus, remote education and assistance are now considered alternatives in the context of the health crisis.

The pandemic had overwhelming effects on health systems, resulting in the directing of all efforts and resources to respond to the health emergency, causing a strong damming of care for other diseases. Telemedicine and telehealth, which were already used in Brazil, were incorporated as a strategy to strengthen healthcare management and networks implemented in the SGTES-MS since 2007¹². However, the regulation of this type of assistance within the scope of professions, for example, occurred at different times: starting with the pandemic, Federal Law No. 13.989/2020¹³ authorized medical teleconsultation; nursing also regulated teleconsultation (Cofen Resolution No. 634/2020)¹⁴.

Historical series surveys by the Ponto BR Information and Coordination Center (NIC.br)

and the Regional Center for Studies for the Development of Information (Cetic.br), linked to the Internet Management Committee in Brazil (CGI), show the expansion of the use of telehealth in Brazil during the pandemic¹⁵. The ICT Panel COVID-19 survey identified that 77% of internet users sought information related to health and health services, and ¼ of the users used telehealth services.

The emergency changes implemented to face the effects of the pandemic resulted in more profound and non-transitory transformations in teaching models and health actions. Hybrid teaching and care remain and challenge the health sector to create procedures while maintaining the critical focus on quality of care and health needs, preserving the principle of health as a right.

Healthcare work: job market characteristics

Since the 1940s, the tertiary sector has expanded more than the industrial sector in the world, due to trends of economic stagnation in the industrial sector; the absorption of the unemployed HCW and the growth of structural unemployment; the growth and diversification of branches of the service sector (research, design, etc.); the outsourcing of various activities that meet the needs of the industrial sector (maintenance, administration, etc.); and the provision of services that were previously under the responsibility of the state, especially in Western European countries that adopted Social Welfare State policies¹⁶.

There was also a growth in the supply of healthcare services with the expansion of public policies and a market centered on hospital complexes. After the 1970s and 1980s, a scenario of technological increment took shape, accompanied by the rationalization and specialization of the HCW and the diversification of services outside hospital environments. In Brazil, these phenomena also occurred dynamically and in a variety of segments, ranging from outpatient services to sanitation activities^{17,18}.

The Health Labor Market (HLM) is seen as sensitive to technological innovations, an area in which the workforce is essential, an area that requires permanent qualification, and a sector that is heavily influenced by public policies, but has difficulties in regulating the labor market due to the strong corporate apparatus of the professions, which generate tensions regarding professional practices and market institutionalization¹⁹.

Therefore, it can be said that the COVID-19 pandemic scenario had social and economic impacts in the world and in Brazil, affecting the HLM in different ways, from technological innovations (complementary tests, vaccines, telemedicine, etc.) to exposure of the vulnerabilities and weaknesses of healthcare working conditions⁴.

Nevertheless, reflecting on healthcare work is a complex task. It is a collective activity, conducted by people with different knowledge and professional practices, whose product is healthcare provided to people²⁰. In analyzing the healthcare work process, it is important to observe three interdependent aspects: a) healthcare work is included in the set of other work processes that occur in other fields and are identified with it; b) it is a 'service' intended for individuals or the general population; c) it is based on an intense personal interrelationship, demanding participation and mutual involvement, becoming an interpersonal encounter, that is, caring for life²¹. In a more recent study, Brito²² points out the importance of including personal interrelationships in the analyses, materialized by a unique dialogue between collective workers and users.

Another relevant issue is the inclusion of women in the HLM, since they are the majority, as pointed out by the joint report by the ILO and the WHO, published on July 13, 2022, in which women represent 67% of the HCW in care worldwide. However, it also indicates that they face a more significant wage difference than in other sectors of the economy, in which they earn on average 24% less than men, illustrating the devaluation of this female workforce when compared to the male workforce. It also points out that wages in healthcare work tend to be, globally, lower than those in other economic sectors, which is associated with the fact that the healthcare sector absorbs more women than men²³.

In Brazil, over 70% of this HCW consists of women, and in nursing, specifically, this percentage is close to 85%. Studies conducted in Mozambique^{24,25} also reveal the presence of women in the healthcare workforce. Updated data from the Mozambican Department of Health show that, of the more than 53,000 healthcare workers in the country, 57% are women²⁶. The most important fact is the participation of nursing in the reduction of maternal and child mortality rates throughout the country. It should be noted that Maternal and Child Health Nursing (MCHN), in addition to being 100% female, is the second-largest group in the Health System's National Health Service²⁴⁻²⁶.

During the pandemic, female participation also stood out, as seen in international data. Women are responsible for most of the COVID-19 care in Brazil and in the world in general^{4,27}. The proposal to look at people's health, ensuring comprehensiveness and equity, requires that the HP work in an integral manner and in all areas of care, whether in health units or in community spaces²⁸.

The healthcare work world: professionalism, hierarchy, and invisibility

Abbott's²⁹ assertion that "professions dominate our modern world and our bodies, measure our profits, and save our souls" is no exaggeration, and he calls this the "myth of professionalism". Healthcare embodies this premise, and the economy sector may be considered an archetype of this ideal since almost all health activities require qualification, knowledge, and, in most cases, a health certificate/diploma, or similar from practitioners, that is, the 'professional passport' for the full exercise of the activity.

A phenomenon that arises in the world of healthcare work is "the emergence of numerous legal processes requiring the recognition of a professional status". A recent example was the approval of Law No. 14.536/2023, which regulated the activity of Community Health Agents (CHA) and Endemic Combat Agents (ECA) and recognized them as HPs³⁰. This political action "reflects the 'social need' that the services in a certain technical area offer society differentiated, specialized, and good quality products"³¹.

These "professionalized and specialized markets" existing in the world of modern work emerged from the transformations resulting from the industrial revolution and the structuring and consolidation of capitalism, which began to demand a qualified and competent workforce to produce socially reliable products and services on an industrial scale.

The evolutionary process of science will be reflected in changes in cognitive bases and professional practices. Thomas Kuhn tells us that these changes must be perceived by society as progress, since cognitive activity must be treated as science within scientific communities, by sequences of shared tacit understandings, as "paradigms"³².

Traditional professions, such as lawyers, doctors, and engineers, have also experienced technical-scientific transformations that have required political-ideological reordering of the "ideal of serving", evoking corporate interests,

meeting economic and technological demands, and moving away from ideology, consequently becoming a historical anachronism, as it disregards the ideological role of the State, creating micro-collectives, or professional ghettos.

The pandemic unveiled the myth of “professional authority”, showing its limitations and demanding an interdisciplinary look based on modern science. This means that the technical activity of any established profession, and especially in healthcare, must be guided by “a set of continuous, systematic acts that follow a certain technical-scientific logic”. Denialism, the anti-vaccine movement, and the questioning of the use of PPE and social distancing, show that the construct of knowledge is frequently shaped on subjective bases and through abstract and theoretical paths, thereby requiring a review of the idea of professions being isolated and autonomous entities and placing more emphasis on the ideological orientation they adopt³³.

Thus, in sociological analyses, the focus should be placed on the work environment rather than on corporate structures, given that the concept of professionalization is misleading, as it neglects social actors, that is, how they move and adapt to the work environment. The centrality of the analysis must take advantage of the evidence in jurisdictional disputes among professions²⁹. Understanding these systems allows us to enter the real work environment, where professions coexist and compete for territories, knowledge, and professional practices, as well as the labor market itself. This is a lesson to be considered.

Nevertheless, the pandemic has shown that, although working in teams and in shared environments, the healthcare workforce is organized into different work environments, technically and socially separated, revealing enormous inequality and social discrimination in the work process. Studies on work conditions for HPs⁵ and IHPs⁶ have exposed these unequal worlds.

In the world of health professionals, the healthcare workforce exercises its profession with full technical autonomy. Conversely, technical, assistant, and support healthcare workers may or may not have the specific qualification to work in this industry. This group frequently has no technical autonomy in their activities and is often invisible in the work process. Therefore, these are work environments with a hierarchical, vertical, and authoritarian work process, in which only the voices of technical managers are heard.

This study allows for a more precise concept of “invisible workers”, with different levels of invisibility:

1) *Regulated invisibility*, in which, despite dealing with legally acknowledged and regulated activities, the nursing, radiology, pharmacy, clinical analysis laboratories, and oral health assistants and technicians who perform them are not duly recognized or valued in their work environment, in their teams, or in society in general.

2) *Systemic invisibility*, in which workers have no formal or legal mechanisms that regulate the activities they perform, although they are highly useful and necessary specific and technical activities. The system does not recognize them as proper healthcare workers, but as temporary labor. Ambulance drivers, stretcher-bearers, and orthopedic immobilization technicians are examples of the countless IHPs who have no professional citizenship in the healthcare work environment. The CHA and the ECA broke this barrier when they were legally recognized as HPs³⁰.

3) *Pre-citizenship invisibility*, in which workers who provide highly relevant, useful, and visible services for the operation and maintenance of healthcare work environments, paradoxically are at the end of the invisibility line, as they are outsourced employees, viewed as “external” to the institutions, have precarious labor ties with employers, and are under growing uberization, subjected to terrible work conditions. They are referred to as cleaning, kitchen, maintenance, conservation, security, reception, and administrative support “people”, and, in the healthcare work environment, they are invisible to institutions and teams.

At the end of the work process line are grave-diggers, who are responsible for the final ritual in the circle of life, who became tragically visible during the pandemic. However, these workers have everything denied to them: professional identity, social and labor rights, and biosafety, despite the unhealthy nature of their activities. These workers are submerged in the work environment.

The world of healthcare work is divided into two separate realities, in which some work in professional and hierarchical environments, while others have to face social invisibility and discrimination.

Final considerations: future challenges

The COVID-19 pandemic exposed several existing structural problems regarding the regulation and formation of HCW worldwide, which can be interpreted as yet another reflection of the socioeconomic inequalities between countries

in the global North and South. Therefore, for a more in-depth understanding of the difficulties concerning HCW, it is necessary to resume the discussion of the key role played by these workers in this sector to understand that healthcare workers are essential in the construction of any public health policy or the organization and operation of the most diverse health systems, whether public or private. For this, it is necessary to continue interpreting how healthcare work has undergone several transformations in the contemporary globalized context and the technological revolution 4.0, with the increasing effects of precarious work conditions and technological and information system innovations.

It is a fact that health work is a complex task, as it is aimed at individuals or populations; that is, it is based on a special interpersonal encounter to care for life. The inclusion and strengthening of Permanent Health Education in the institutional culture is a powerful strategy to transform healthcare practices, as it enables one to reflect on daily activities, share experiences, and promote patient safety.

An issue of major importance concerns two defining characteristics of the HCW: *gender and color/race*. These are 4.5 million people working in all regions of the country, most of whom (77%) are women. It is possible to say that healthcare is feminine, as it is provided mostly by women. Race is another defining characteristic that divides HCW into two racial poles: white (57.7% of healthcare professionals), and black and brown (59% of invisible workers). Among HPs, 0.2% of indigenous people are registered, and among the IHCs, 0.5% (more than twice the percentage for HP). These are defining variables for healthcare professions and occupations, which often determine their professional status in the Health Labor Market. Research data show different worlds from a technically, economically, and socially unequal point of view, which are expressed in highlighted points in the text: access to training during the pandemic, the right to the vaccine at the beginning of the first dose application, access to PPE, and especially wage disparities separate these two worlds, the “visible” and the “invisible”.

It is possible to compare the work environment described by Antunes³⁴ to the healthcare sector, given the enormous similarity of the realities: “Uberization of work, different ways of being in informality, unlimited precariousness, exacerbated structural unemployment, increased intermittent jobs, accidents, harassment, deaths, and suicides, this is the expanding work envi-

ronment...”. In the pre-pandemic period, the healthcare work scenario had striking similarities in terms of the precariousness of the HCW, widespread informality of labor relations with clear confiscation of labor rights, and physical and mental illness of its workers. Countless healthcare workers are invisible and helpless, with salaries unable to maintain their livelihood and home; work, thus, becomes a heavy burden. The pandemic simply exacerbated this unfortunate reality.

There is no doubt about the need for public policies that privilege the two main characteristics of healthcare workers: gender and color/race. These public policies must observe racial composition and promote equal rights and access to training and work for both black and brown individuals, reducing discrimination and social inequalities that have existed throughout our history. It is also important to note that there is a minimal participation of healthcare workers of indigenous origin, even though the country has a significant indigenous population and a Special Secretariat for Indigenous Health (SESAI), which is responsible for coordinating and executing the National Health Care Policy for Indigenous Peoples, and even more recently, the historical creation of the Department of Indigenous Peoples. It is necessary to think and formulate work and education management policies that deal with the specificity of indigenous healthcare workers.

It is imperative that the public health management (SUS) promote the discussion concerning healthcare workers as an “institutional strategy” in order to acknowledge and give value to each worker, bringing social inclusion and recognition of the essential work performed by all.

The designation of “invisible healthcare workers”, used as criticism in this study, needs to be taken seriously as a denunciation of the unacceptable situation of invisibility and institutional contempt for those who perform essential healthcare activities. Visibility for invisible workers needs to be a matter of political discussion in the work environment so as to eliminate the existence of two socially unequal worlds. Listening, debate, and inclusion indicate one possible way of overcoming these problems.

Nevertheless, hybrid healthcare is here to stay and new procedures must be adopted while maintaining the critical focus on the quality of care and healthcare needs, preserving the principle of health as a right.

Faced with post-pandemic uncertainties, rescuing the guidelines of the national policy on

work management and health education is critical for an integrative approach between work management and health education, teaching-service-community integration, as well as research strategies and knowledge for decision-making.

Collaborations

MH Machado, F Campos, AE Haddad, PM Santos Neto, AV Machado, VGD Santana, HCO Merengue, RPO Santos, CC Mauaie and NP Freire participated in the study concept and design, writing and revision of the intellectual content, as well as the final manuscript version.

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