

Effects of the COVID-19 pandemic on health surveillance work

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Abstract *The COVID-19 pandemic has challenged managers and exposed weaknesses in health systems. In Brazil, the pandemic emerged amid difficulties to work in the Brazilian Unified Health System (SUS) and in health surveillance (HS). The purpose of this article is to analyze the effects of COVID-19 on the organization, working conditions, management, and performance of HS, according to the perception of capital city managers from three regions of Brazil. This is an exploratory, descriptive research with qualitative analysis. The Iramuteq software was used in the treatment of the textual corpus and analysis of descending hierarchical classification, which generated four classes: characteristics of HS work during the pandemic (39.9%), HS organization and working conditions during the pandemic (12.3%), effects of the pandemic on work (34.4%), and the class of the health protection of workers and the population (13.4%). HS implemented remote work, expanded work shifts, and diversified its actions. However, it faced difficulties with personnel, infrastructure, and insufficient training. The present study also pointed out the potential for joint actions concerning HS.*

Key words *Health surveillance, COVID-19, Health work, Health management*

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Introduction

The COVID-19 pandemic was a challenge for the public managers and unveiled the weaknesses of the health systems. That phenomenon demanded rapid health action responses regarding goods, services, environments, transportation means, and the population. In Brazil, the health crisis became intertwined with the social, economic, environmental and political crises in a way that iniquities and social vulnerability potentialized the effects of the pandemic and of the disease's burden, characterizing what is considered a syndemic¹⁻³.

In addition, the pandemic also worsened the inequalities in the work environment in a scenario in which the workers in general were already suffering due to the lack of worker rights. Work in the health area, by its nature and essential character, dealt with significant morbidity levels caused by COVID-19. The work overload caused mental suffering and the Burnout Syndrome became frequent. In the beginning of the pandemic, the lack of personal protective equipment (PPE) for health professionals caused an increased risk of sickening and death.

In the fight against the transmission of SARS-Cov-2, an international division of labor became evident, in which only a few countries actually owned biomedical technologies and health inputs, and Brazil was heavily dependent on those products. Under such circumstances, the importance of health surveillance stands out in order to control the potential health risks in the chains of production and consumption of goods and services, as well as in the environment. The strategic importance of the Brazilian National Health Surveillance System (SNVS in Portuguese) stood out, comprised by the National Agency for Health Surveillance (ANVISA, in Portuguese), together with the State and Municipal surveillance agencies and the network of analytical health laboratories, coordinated by the National Institute of Quality Control in Health (INCQS, in Portuguese).

During the pandemic, the activities of health inspection of production and commerce focused mainly on medical equipment, medication, and health services provided to the population, as well as on the adoption of fast-track processes for the registration of vaccines and fast COVID-19 tests. Focus was also placed on the permission for clinical research for new therapies and new uses for known drugs, as well as the control of travelers, among other issues. Health Surveillance (HS) is organized in a systematic manner, according to

a complementarity logic, observing the interfederative relationships and the competences of the agents who are part of the SNVS. The objectives of their work are, at the same time, social goods with health interests and products available for consumption; therefore, HS work is part of the attributions of the State in the process of regulating the relationships between health and market.

HS actions have distinctive functions: sanitary, economic, and juridical-political, which compete against each other in the control of health decision-making processes. Health inspection, which is the exercising of a policing power through HS, takes place in observance of Public Administration principles. HS shares competence with other government departments, which demands articulated and intersectoral actions for the intervention on health problems, which is strategic for providing more effectiveness for its actions in a complex situation such as in the COVID-19 pandemic.

The pandemic occurred in a scenario of difficulties in terms of the work provided by SUS (Unified Health System in Portuguese) and in terms of SAVE services, given the precarious working conditions, shortage of personnel, and poor infrastructure, which limit its performance. It is thus important to reflect upon the challenges presented to HS work carried out during the pandemic, and at the same time, to identify the potential which was revealed in that context.

The objective of this article is, therefore, to analyze the effects of the COVID-19 pandemic on the organization, working conditions, management, and the HS work, according to perceptions reported by managers from three different regions of Brazil.

Methodological strategies

This article is part of the study "Analysis of models and strategies of HS during the COVID-19 pandemic (2020-2022)" approved and financed by Decision no. MCTIC/CNPq/FNDCT/MS/SC-TIE/Decit 07/2020. It is a descriptive and exploratory research, following a qualitative approach, conducted with HS managers from three regions of Brazil: North, Northeast, and Southeast.

Based on the interviews, the content was built and submitted to lexicographic textual analysis, using the R Interface software *pour Analyses Multidimensionnelles de Textes et de Questionnaires* (IRAMUTEQ). This software allows one to analyze the linguistic corpus from text data in a

transparent and systematic manner. The analysis groups words with similar meanings together, as well as separates those with a different sense in the speech, allowing one to subsidize the understanding of the words' environment of meaning, and in so doing, indicates the meanings/representations/perceptions referring to the studied object.

IRAMUTEQ is a free software, developed according to the open source logic, and has been recommended for analyses of qualitative data consisting of a "corpus" of larger textual volume, thereby allowing the researchers to explore, describe, and compare data in greater detail¹².

Twelve managers from municipal HS groups participated in the study, from capital cities from the three regions of Brazil mentioned above, of both genders, and working as managers for a time ranging from two months to 16 years. The cities were selected according to three criteria: being a state capital; being cities from different regions of Brazil; presenting different states of virus transmission (acceleration, deceleration and stabilization) during the first wave of the pandemic in Brazil.

The data was produced through semi-structured interviews applied individually, between September/2021 and April/2022. In face of the pandemic context, the interviews were conducted through a virtual platform, at scheduled times, and recorded.

The data analysis and processing took place in steps. In the first moment, the interviews were transcribed, read, and revised. In the second moment, a "corpus" was built by grouping the answers given by the interviewed managers regarding HS management during the pandemic and infrastructure issues. The elaboration of this corpus followed a standard according to the recommendations of the software and each answer by the managers was grouped and separated in command lines, which included the variables of interest for the study, in a manner in which it was possible to identify the significant variable in the analyzed testimonies. The corpus was submitted to the Descending Hierarchical Classification (DHC) analysis, a model proposed by Reinert¹².

The DHC classifies text segments according to the vocabulary and the grouping takes place according to the frequency of the lexical root. Such an analysis identifies coinciding words, and then shows the indications of connectivity among the terms, revealing the structure of the textual corpus, as well as common attributes and specific elements according to the illustrative variables in

the analysis. Therefore, each text is transformed into text segments grouped in classes of meaning. The criteria for the creation of the classes use the frequency of words larger than twice the average of the occurrences in the corpus, and an association with the class determined by the value of chi-square equal or above 3.84, with the calculation defining significance below 0.05 ($p < 0.05$). The software shows the data analysis in the format of a dendrogram, which is a representation of the relationships between the classes, allowing for the description of each of the classes, which are based on the lexical vocabulary and its variables¹².

In the last phase, an interpretative analysis of the meanings of the classes was conducted. The meaning attributed to the categories was performed by three researchers in order to reduce the risk of allocation bias. Interpretation and conclusion on the findings were based on the theories/references in the field of HS.

The ethical aspects were respected according to the Resolutions of the National Health Council, and data collection began after approval by the Research Ethics Committee from the Instituto de Saúde Coletiva and the REC of the respective services and/or institutions, according to Decisions no. 4,586,652; 4,623,542; 5,050,400; and 5,006,513.

Results and discussion

The corpus consisted of 12 texts, separated in 795 text segments (TS), of which 665 were used, resulting in 83.65% of the total number of TS analyzed by the DHC. This level of usefulness meets the efficiency criteria of the DHC analysis proposed by the software, which recommends minimal retention standards of between 70% and 75% of the TS¹². The analysis resulted in 27,913 words; 3,845 occurrences of different words; and 1,343 words with single occurrence (4.81%) (Table 1).

The DHC analysis divided the corpus into two partitions, and each of which generated two classes of words. The first, named "HS work during the COVID-19 pandemic", generated Class 3 (39.9%) – "Characteristics of HS work during the pandemic" and Class 2 (12.4%) – "Organization and working conditions for HS during the pandemic". The second partition, named "Effects of the COVID-19 pandemic on HS" also resulted in two classes: Class 1 (34.4%) – "Effects of the pandemic on work" and Class 4 (13.4%) – "Health protection for the workers and the population (Figure 1).

Table 1. Characterization of the corpus.

Corpus	N° of texts	N° of ST	N° of occurrences	N° of word forms	N° of catchphrases	N° of active words	N° of supplementary words	N° of Hapax	ST Classification
Perception of HS managers regarding management and infrastructure in the context of the COVID-19 pandemic	12	795	27,913	3,845	2,453	2,598	133	1,343	83.65%

Legends: Number of Texts: number of texts that make up the corpus. Number of ST: number of text segment fragments identified by the software based on the number of texts. Number of Occurrences: total number of word occurrences. Number of Word Forms: number of word forms present in the text. Number of Catchphrases: number of types related to the key words. Number of Active Forms: the main words of the corpus. Number of Supplementary Forms: words considered supplementary to the corpus. Number of Hapax: words that appear only once in the entire corpus. ST Classification: number of text segments used by the software.

Source: Organized by the authors using the data obtained in the analysis of the Iramuteq software.

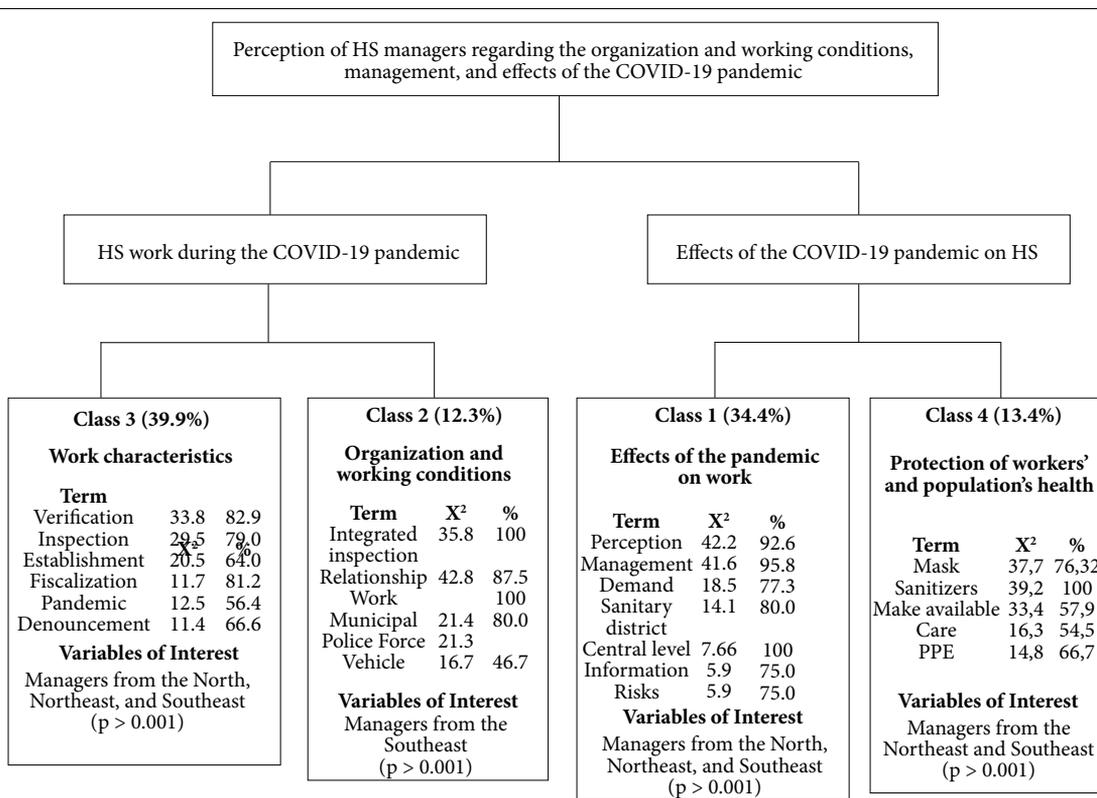


Figure 1. Dendrogram of the descending hierarchical classification (DHC) of the corpus of HS managers from the capital cities of the North, Northeast, and Southeast regions regarding the effects of the COVID-19 pandemic on Health Surveillance work. Brazil, 2022.

Source: Authors.

Characteristics of HS work during the pandemic

Class 3, responsible for 39.9% of the TS analyzed in this study, showed the concepts expressed by the interviewed managers concerning the characteristics of the HS work in the context of the pandemic. The words which stood out were verify, inspection, establishments, inspecting, pandemic, and denounce. The significant variable demonstrated that managers from the 3 regions in the study were important for the construction of meaning in this class ($p > 0.001$).

The emergence of the pandemic altered the HS working conditions. Activities directly related to the control of the pandemic were prioritized. We observed that inspection, which is a central practice in the realm of HS, and was aimed at the granting of health licenses for other objectives before the pandemic, turned into an inspection of the observance of norms and protocols established for the control of the pandemic, and guidance for establishments which were important for health.

The inspections began to take place on other objectives and unusual activities, for example, locations for party events, schools, penitentiaries, funeral services, among others.

The intensification of HS work was observed in routine places, such as drugstores, initially to verify the procedures in order to avoid crowding, the use of masks, and the offering of 70% alcohol, and later, to inspect the conditions necessary to conduct rapid COVID-19 tests.

[...] there was no specific protocol for the drugstore, but you had to follow the general protocol and organization of cues, there was also the credit card machine, if it was protected or not, if there was distancing (Northeast Manager).

Before the pandemic, drugstores were not allowed to conduct rapid tests, but with the pandemic, ANVISA began to allow rapid tests to be conducted. That was already a change in the work process (Northeast Manager).

The long-term institutions for the elderly (LTIE) are establishments which house individuals with a high risk or serious case of infection by COVID-19, given the age of the individuals and the high prevalence of chronic diseases, which make them more vulnerable. ANVISA published a technical note focusing on those institutions, with information regarding the use of masks, distancing, sanitization, procedures for safe visits to the residents, as well as protocols for the reception of the elderly.

Moreover, inspections were intensified in primary care units and hospitals due to the need to verify the use of Personal Protective Equipment (PPE) by health workers.

We conducted a joint action with the Ministry of Health to verify the hospital equipment at the hospitals that were receiving COVID-19 patients. We inspected the ventilators and the quality of the ICU beds (North Manager).

HS acted in accordance with the pandemic's dynamics, intensifying activities in the health area, inspecting the observance of restrictive measures to protect the health of the population, following up the closing and reopening of establishments that were a concern for health, such as schools, which required a more intense HS action. There were also gyms, restaurants, medical and dental offices, etc., which had to be followed-up on at the time of closing and reopening.

There was reference to the relevant HS work in terms of the workers' health, an attribution which was not generally part of HS. The managers highlighted the inspection of working conditions aimed at the reduction of contamination risks, the regular provision of PPE, the meeting the surveillance standards in suspicious cases and the withdrawal of individuals who tested positive, and respect for the protocols for situations of remote work. Such actions extended to HS workers, to health workers in general, to food delivery workers, and to those involved in the collection of residue from health services.

But in our town there is a technical team which works with workers' health, and we are one more form of support to apply measures with the power to police and to fight against COVID, there were actually many denunciations, mostly related to workers' health (Southeast Manager).

We call attention to the intensification of denunciations by the population and the Public Ministry for their lack of observance of norms related to COVID. Channels were opened to receive denunciations at the municipal health secretaries and at HS services, which decreased as the economic activities were flexibilized.

We should also highlight here, the search for agility in receiving denunciations, with an effort to establish technical criteria in decision-making:

We elected as our priority, caring for the demands related to contingency and to fighting COVID-19 in our town. For all of the denunciations related to COVID, we established the maximum 5-day period, based on the technical criteria of 5 days as the period of viral multiplication, and

we managed to interfere in the cycle of viral multiplication (Southeast Manager).

The most expressive part of HS work included attending to the demands of the regulated segments. We highlight, as one of the HS challenges, the need for a model to identify the main health risks, both regionally and locally, with its work aimed at the priorities, since there is scarcity of resources, and its operation should be directed by the health scenario of the population, in an interconnected manner with other instances of HS that act together with the evaluation of health risks.

Cooperative federalism, which characterized SUS and SNVS, was important in the fight against the pandemic. ANVISA, which coordinated SNVS, worked intensively in guiding health control, by publishing technical notes and resolutions to be observed by health services, as well as by HS and regulated segments, thus contributing to aligning the actions in the fight against the disease in states and municipalities, especially as regards their different capacity for response. As such, it could rely on having a qualified and specialized technical staff.

Although ANVISA plays a strategic role, and considering the visibility that HS received during the pandemic, these facts did not overcome a certain isolation of HS in relation to other health actions. The agency has also faced difficulties in exerting a interfederative coordination which would result in an effective systemic organization^{17,18}. That insufficient systemic organization was indicated by the interviewees as a lack of local and national coordination, which could articulate HS actions with other actions in the health field.

We miss local and national coordination, we did not have that, we were not included in the coordination for dealing with COVID (North Manager).

Besides the isolation, the managers also reported insufficient capacitation, not having included – or having included too late – HS in the planning processes and the elaboration of the contingency plans and in the health committees.

Souza et al., when analyzing impacts and challenges for HS during the pandemic, realized that there was a need to strengthen ANVISA's strategic character, with autonomy to perform its regulatory function, with stability for its managers and technical staff, as well as coordination in the systemic management of SNVS.

HS organization and working conditions during the pandemic

Class 2 (12.3%) covers aspects regarding organization and working conditions, as well as the protection of workers' health and arrangements to overcome difficulties in fighting the pandemic. The terms integrated inspection, relationship, acting, municipal police, and vehicle were important to express the feeling of the professional class. The significant variable demonstrated that the Southeast Managers stood out in terms of constructing a meaning ($p > 0.001$) (Figure 1).

In the interviewees' perception, with the emergency of the pandemic, there was a need to reorganize work, rearrange physical space in the service, and introduce remote work in order to avoid crowding.

From the beginning of the pandemic, countries implemented interventions to contain the spread of the infection, such as isolation of sick individuals, the use of PPEs, social distancing, the shutdown of educational facilities, the prohibition of events, among others. Those strategies influenced HS work in terms of adopting measures to protect workers, since their work was maintained and intensified.

To meet the demand, increased mainly by denouncements and requests from the Public Ministry, additional work shifts were instituted, including work at night and on the weekends, resulting in work overburdening.

In the beginning, we did night shifts and weekend shifts to prevent some establishments from opening in a clandestine manner, that happened a lot, 2020, 2021 (Southeast Manager).

To perform certain activities that appeared in the context of the pandemic, it became necessary to implement protocols and specific inspection schemes, as well as to promote training, which had not occurred or occurred in a limited manner, resulting in insecurity among the professionals when faced with unusual HS activities at the municipal level.

Training for my area of HS? There was none! There was a lot of training for care. We had discussions, meetings, but training like: "let's call all of the inspectors to have a training session about fighting COVID" – we did not have that. We just went on acting according to protocols, discussing, elaborating (Southeast Manager).

Old challenges in the area still persist and became more evident during the pandemic. The career issues for HS personnel at state and municipal levels, as well as expanding and reinforcing

ing the qualifications of the workers with a focus on the health risks in their areas, is still a major challenge for SNVS and for SUS²⁰.

The difficulties in terms of insufficient vehicles to inspect work and to check establishments and activities required a reduction in team size in order to preserve some distance between the workers during transportation.

We had difficulties in terms of vehicles, and even in terms of the professionals, so that we could keep up with those tasks (Southeast Manager).

The interviewees referred to some progress in the computerization of the process of granting sanitary licenses to establishments classified as low risk, facilitating remote work; however, some indicated limits due to the deficiencies in the service infrastructure in terms of a lack of computers.

The only significant change I noticed was a movement to make work more virtual. I think that it worked out; in a certain way, more efficiency when dealing with some issues which were dealt with in a very bureaucratic fashion. However, I believe that it was still limited. We have a physical structure which is very precarious. How can you bring to the digital world a sector which does not have the necessary tools to make that possible? (Northeast Manager).

Throughout the pandemic, there was intensification of HS work interconnected with other components in the realm of health – epidemiological surveillance, zoonosis control, workers' health – and with other institutional segments, such as the Secretary for Urban Development, municipal police, and military police.

We can notice that the scarcity of personnel resulted in more cooperation among surveillance services, especially among health and epidemiologic surveillance. The police power, an HS attribute, was relevant in joint actions with the workers' health surveillance, since the former has no legal prerogative.

Those who work in workers' health surveillance do not have the police power as we have; therefore, there is always an enormous responsibility which ends up left for us, to also keep an eye on matters of workers' health. Nowadays, we have a very strong articulation with surveillance in health and epidemiological surveillance, we have done regular inspections in joint actions (Northeast Manager).

Interlinked surveillance has been recommended as a model in HS, with potential for joint and integrated interventions on health risk factors and measures of health protection. Such a need has become even more evident during the

pandemic. In the COVID-19 pandemic, giving priority to resources was aimed at care, especially hospital care. Primary care had its relevance minimized. In the initial stage of the pandemic, the makers of policies, in their majority, did not inform and did not prepare the services to provide care and protection to the teams and the users. In the case of HS, the failure in hiring additional staff made the services face an increase in demand upon teams which were already historically small⁹.

The issue of insufficient human resources did not affect only HS, and even worked as a stimulus for intra and intersectoral cooperation. Although it has police power when exercising its function, HS, according to the interviewees, was forced to resort to the municipal police or the military police to guarantee the safety of its workers when faced with threats to their physical integrity, especially during inspections of events and festive agglomerations which were violating the restrictions legally imposed during the pandemic.

I think no HS agency in Brazil had enough structure to do that job, we needed help from the municipal government, they had to provide vans or buses so we could go out with the team, since there was even the risk of physical aggression, people wanting to stay open, and then, we could go out together as a multidisciplinary team, with the Municipal Police, each one doing his part (Southeast Manager).

Effects of the pandemic on HS work

Class 1 (34,4%) combined the meanings related to the effects of the pandemic on the HS work, in the interviewees' understanding. According to the managers, the pandemic provoked an increased demand for HS work and affected the workers' health, especially mental health due to the fear of catching the Coronavirus and to the work overload.

There was a time when there was work overload on the professionals, sometimes we thought the situation was improving a bit and then, they would recruit us for vaccination. There were activities taking place all the time. We could actually notice the physical and mental exhaustion of the team (Northeast Manager).

Organizational support and communication were useful and opportunistic to reduce the pandemic's impacts on mental health. Researchers identified that most of the interventions conducted to prevent or reduce mental health problems did not focus on organizational factors, but rather

mostly on actions related to providing individual mental health services to health professionals²³.

Some of the effects on work organization relate to the scarcity of infrastructure resources and to the risk of contamination by Sars-Cov-2. According to the interviewees, we can notice a need for more health protection of the workers, the need and adequate use of PPEs, and the reorganization of the work environment, etc.

One study identified that the insufficiency or inadequacy of measures for prevention and protection, be they collective or individual, contributed to the spread of the virus and an increased risk in work environments. Regarding the risk of exposure to the virus in the work environment or/end on their way to work, those studies mention that there might be a need to have health surveillance in work spaces and processes, also justifying surveillance actions and care actions for workers' health.

Moreover, those studies reiterate that the increase in demand was not followed by additional resources. The interviewees also referred to the persistence of a lack of knowledge by the managers regarding the reality faced by HS in its work.

I would like to see a Secretary of Health going out to do an inspection. I would really like to see that, so he would understand our reality, they would understand that our process of work requires more resources (Northeast Manager).

Another effect of the pandemic relates to the need to include HS in the management of the fight against the pandemic, something which was expressed in various formats. It happened too late in the course of the pandemic or it never happened at all, according to the opinions of the interviewees:

[...] gradually HS was being included in the management of the pandemic; in the beginning, however, we were not included as we should have been, considering the importance of HS in that scenario (Northeast Manager).

We did not take part in the crisis management committee; we did not have a seat, and our actions were too independent; we did not participate in the coordination and had no support. They did not take care of us! (North Manager).

We put together several groups to work with the committee; there is a committee here which supports the municipal administration, a management committee which supports the city government (Southeast Manager).

Besides insufficient interaction of the municipal government with the local management of health districts, there was also a reference to the

lack of qualification by the managers, as we can see here:

[...] the main problem of management is that we often have people who do not have the profile for being a manager (Northeast Manager).

The process of decentralizing HS has happened under the scope of the differences and inequalities which are characteristic of Brazilian towns, in terms of socioeconomic aspects and in terms of capacity of response to health problems as well. We should highlight the struggles against poor infrastructure and the fight to receive trained personnel, as well as the schedule rotation of the managers, often without the proper training to manage the surveillance services, not to mention the political interference in the managers' work.

Protecting the health of the workers and of the population

Class 4 (13.4%) included the meanings referring to the effects of the pandemic on the protection of the workers' health in general and of the HS workers in particular, and it had the intention to protect the general health of the population. The terms mask, sanitizers, availability, and PPE stood out in terms of the construction of meanings. The discourse of the managers from the Northeast and Southeast regions showed statistical significance ($p > 0.001$).

The results indicated a realignment of the work process towards areas of importance in the pandemic, aimed at protecting the population's health, the general health of the workers, as well as that of the HS workers. The interviewees manifested concern over the guarantee of the availability of personal protection inputs, as well as their quality and adequate use.

Since the first cases of COVID-19 appeared, experts highlighted the importance of guaranteeing access to and adequate use of PPE for health professionals, prioritizing those who faced a higher risk of contamination by the virus, including care professionals. There was an emphasis on the need to structure surveillance programs for occupational health in a way that they can monitor the health workers' mental health, considering that they were struggling with anxiety, depression, and burnout, resulting from the intense emotional burden caused by that health emergency.

In the interviewees' opinion, the change in attitude by the population and by the surveilled establishments inspected by HS, in terms of mea-

asures for health protection, only took place gradually:

There were some cases, only a few, in which people were resisting medical guidance and requirements. We had to act a little more strictly. Currently, the town has been following, in a way which is even exemplary, all of the protocols for COVID (Southeast Manager).

Studies in general demonstrated that the universal use of masks was the main initiative recommended to protect the health of the population. However, that measure proved to be insufficient in reducing virus transmission when implemented in an isolated manner²⁴. Regardless of difficulties and limited coverage, the implementation of protection measures by HS included a focus on workers, establishments, and the population in general.

The large amount of information brought by the media and social networks resulted in an increase in demands on HS in terms of denunciations and doubts related to the pandemic. Such a situation was aggravated by information from the Ministry of Health, which, according to the managers, was imprecise. The quotes below illustrate that problem:

[...] the population was confused with so much information coming from the media, the social networks, people could not do the triage of what was scientific knowledge (Northeast Manager).

[...] amidst the contradictory information coming from the Ministry of Health, I think we even managed to be efficient in the beginning (Northeast Manager).

Responses to the pandemic were influenced by “infodemia” and misinformation. According to the Pan-American Health Organization²⁵, the increased global access to cell phones connected to the Internet, as well as the reach of the social networks, favored the exponential sharing of information, resulting in an epidemic of information which was often false or imprecise²⁴.

In Brazil, politicization of the pandemic by the negativistic faction and omission in the fight against COVID-19 by the President had effects on HS work, according to some managers. The negationist attitude against science sought to invalidate, relativize, substitute and disqualify recommendations from health organizations and even measures of health protection and disease treatment, in favor of illegitimate political and economic interests.

Interviewees reported that, in the beginning of the pandemic, they worried about Sars-Cov-2 infection, feared by the workers in their fiscaliz-

ing/inspecting activities, as well as about mental health. That was associated with information and scientific evidence, which was still insufficient to clarify the concerns related to the pandemic, and that, after vaccination, they felt safer.

There were some professionals who were in real panic because of the possibility of catching COVID; there was a time when they did not want to go out for inspections. The pandemic did not affect only the surveillance actions, when we think about infrastructure, we must include all personnel, we have to consider that aspect as well (Northeast Manager).

For Smallwood, the evidence-based policies and practices, when used by the organizations, have contributed to protecting the health workforce during the ongoing pandemic and for future crises²².

In relation to protecting the health of the population, HS required the establishments to present inspected PPEs for the workers and an availability of 70% alcohol, as well as a mandatory use of masks and the avoidance of an agglomeration of people. The productive segment of health inputs was in charge of verifying the fulfillment of the requirements for the production and distribution of those products.

Final considerations

HS work during the pandemic, in the view of managers from three Brazilian state capitals, reiterates existing structural difficulties, personnel deficit, and the insufficient training of teams and managers when faced with the challenges of controlling health risks. However, a certain resilience by HS was noted at the municipal level, especially in the search for an adjustment to demands, which arose during the pandemic; we can highlight here the increase in information and organization of remote work in order to follow up on administrative processes, and the efforts made in interactions with other public administration sectors, thus overcoming the shortage of personnel.

However, during the pandemic, there was predominance of actions focused on inspection, and insufficient activities of the communication of risks to the population, showing the difficulties in making progress towards an extended model, with more preventive interventions focused on risk factors and on the use of social technologies to produce a more active involvement of the population.

In the discourse of the managers, one could notice the absence of themes, which should have been the focus of attention by the health system in order to control the pandemic, such as vaccines and medication. Although ANVISA stood out for its actions in the process of registering anti-COVID vaccines, the health surveillance managers from the towns present in this study did not refer to any action related to vaccines, for example, regarding the sanitary conditions of the vaccination places, transportation, and storage conditions, nor concerning the follow-up of adverse events and technical complaints about vaccines and medication. Another matter which was not mentioned, within the realm of HS, was self-medication during the pandemic, which involved an irrational consumption of medication with no proven effect against COVID-19, such as Chloroquine-Hydroxychloroquine, Ivermectin and Azithromycin, known as the “COVID Kit”. There was no mention regarding the indiscriminate use of those drugs, which were the object of much controversy in terms of regula-

tion and of research, which could prove their lack of efficacy in controlling the pandemic. We must mention here that the drugs that were more often involved in adverse reactions in COVID patients were hydroxychloroquine (59.5%), azithromycin (9.8%) and chloroquine (5.2%), according to spontaneous notifications to the Brazilian pharmacovigilance system²².

Another important point to highlight is related to the need to strengthen interfederational coordination in order to enable a quick and coordinated response from SNVS in the three spheres of government, thus providing responses in the fight against COVID-19 with actions which cover the dimensions of regulations/norms, inspections, and communication⁹.

The results presented herein encourage reflection on the health situation faced by the towns from the five regions of Brazil, and indicate the need to conduct further studies about this SUS component, which plays a crucial role in the protection and defense of the population's health.

Collaborations

All authors contributed substantially to the design and planning of the study, writing of the final version of the manuscript, critical review of the content and approval of the final version.

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