

Hospital infection control and occupational medicine services in the face of the COVID-19 pandemic in occupational health

Serviços de controle de infecção hospitalar e de medicina do trabalho no enfrentamento à pandemia de COVID-19 na saúde ocupacional

Angela Aparecida Silva Vieira¹ , Suelaine Antônia de Carvalho¹ , Angela de Souza Floriano² , Gabriela Miranda de Oliveira Castro¹ , Aleida Nazareth Soares^{3,4} , Adelino de Melo Freire Júnior¹ , Amanda Damasceno de Souza^{4*} 

¹ Hospital Felício Rocho, Belo Horizonte, MG, Brazil.

² Hospital Madre Teresa, Belo Horizonte, MG, Brazil.

³ Faculdade Santa Casa BH, Belo Horizonte, MG, Brazil.

⁴ Programa de Pós-Graduação em Sistemas de Informação e Gestão do Conhecimento (PPGSIGC), Universidade FUMEC, Belo Horizonte, MG, Brazil.

* Corresponding author/Autor de correspondência: amanda.dsouza@fumec.br

Received/Recebido: 04.07.2022 - Accepted/Aceito: 05.11.2022

ABSTRACT

In this article, the actions developed by the Hospital Infection Control Service (HICS) and Occupational Medicine (OM) to face the COVID-19 pandemic and track cases of infection among employees of a large hospital in Belo Horizonte, Minas Gerais, Brazil. Training actions, guidelines on how to collect a swab sample, Code 19 (COVID-19) simulation, dressing/undressing, hand hygiene, the definition of flows, and the quantification of cases infected by COVID-19 among employees in care areas were highlighted. The engagement of HICS and OM in the prevention and promotion of health were fundamental to facing the pandemic. It is estimated that SARS-CoV-2 infection rates among staff at the study hospital were similar to those at other hospitals. The experience report is important for expanding knowledge about action planning in the context of a large hospital.

Keywords. COVID-19, Infection Control, Occupational Medicine, Occupational Health.

RESUMO

Neste artigo, são relatadas as ações desenvolvidas pelo Serviço de Controle de Infecção Hospitalar (SCIH) e Medicina do Trabalho (MT) para o enfrentamento da pandemia de COVID-19 e rastreamento dos casos de infecção entre funcionários de um hospital de grande porte de Belo Horizonte, Minas Gerais, Brasil. Destacaram-se as ações de treinamentos, orientações de como coletar amostra de *swab*, simulação Código 19 (COVID-19), paramentação/desparamentação, higiene das mãos, definição de fluxos e quantificação dos casos infectados por COVID-19 entre funcionários de áreas assistenciais. O engajamento do SCIH e da MT na prevenção e promoção da saúde foi fundamental no enfrentamento da pandemia. Estima-se que os índices de infecção pelo SARS-CoV-2 entre os funcionários do hospital em estudo foram similares aos de outros hospitais. O relato de experiência é importante para a ampliação do conhecimento sobre o planejamento de ações no contexto de um hospital de grande porte.

Palavras-chave. COVID-19, Controle de Infecção, Medicina do Trabalho, Saúde do Trabalhador.

INTRODUCTION

With the emergence, in the city of Wuhan, Hubei Province, China, and the subsequent spread of the Coronavirus Disease (COVID-19), caused by SARS-CoV-2, and the declaration of a pandemic by the World Health Organization (WHO) on March 11, 2020, health workers had to prepare to face the disease^{1,2}. Actions were promoted in the hospitals environments to minimize the impacts of the pandemic and continue to provide safe and quality care. Since the first case report in Wuhan, cases have been reported on every continent with the exception of Antarctica. The reported case count underestimates the total number of COVID-19 cases, as only a fraction of acute infections are diagnosed and reported. The main form of transmission is from person to person. To reduce the risk of community spread, it is advised to wear a mask, wash hands diligently, practice respiratory etiquette (e.g., covering the face when coughing), and practice social or physical distancing when avoiding crowds and close contact with sick individuals³.

Worldwide, by the end of January 2022, more than 358 million confirmed cases, 5,617,767 deaths, and 9,850,294,423 vaccinated people had been reported⁴. Brazil registered the first case in Latin America on February 26, 2020: a man who had returned from a trip to Lombardy, Italy⁵. With the proliferation of contamination by COVID-19, Brazil has one of the highest rates of contagion of the disease in the world, even after following the WHO recommendations and scientific evidence published in 2020⁶. However, it is worth noticing that the country has distinct and peculiar characteristics, including the population structure, which is mainly made up of young people and adults. The most prevalent comorbidities in the Brazilian population are diabetes, hypertension, HIV, tuberculosis, and obesity, among others⁷. As of November 23, 2021, Brazil had 22,019,870 new cases and 612,782 deaths due to COVID-19⁸.

Vaccines to prevent SARS-CoV-2 infection are considered the most promising approach to containing the pandemic⁹. The National Health Surveillance Agency (Anvisa) authorized, temporarily, the emergency use of the CoronaVac vaccine (developed by the pharmaceutical company Sinovac in partnership with the Butantan Institute) and Janssen (developed by Johnson & Johnson) and, now with definitive registry, the Covishield vaccine (produced by the pharmaceutical Serum Institute of India, in partnership with AstraZeneca/the University of Oxford/Fiocruz). In February 2021, the Pfizer/BioNTech vaccine received sanitary registration from Anvisa^{10,11}.

According to Souza¹², one of the main problems faced during the pandemic refers to the relevant rate of health workers infected or killed by COVID-19. It is estimated that in countries with the most cases of COVID-19 in 2020, 4% to 12% of confirmed cases of the disease will be among healthcare workers. Factors such as working conditions, qualification, better-structured health systems, policies, programs, and protocols that allowed the exercise of protagonism in patient care, Personal Protective Equipment (PPE) and hygiene measures were essential to face the pandemic. Worldwide, thousands of workers have been infected with COVID-19 or have died from it. Discussing the actions taken by health professionals directly involved in patient care as well as by the sectors involved in organizing working conditions and infection control in the hospital environments crucial in this context¹³.

This study is justified by the need to produce and disseminate knowledge capable of promoting individual health through collective measures against COVID-19. Thus, the experience report has an important role in the consolidation of practices, activities, and scientific knowledge about the work of health professionals in the hospital context, adding knowledge both to the nursing area and to the health area in general.

The objective of the study was to report the actions developed by the Hospital Infection Control Service (HICS) and by Occupational Medicine (OM) to face the COVID-19 pandemic and track cases of infection among employees of a large hospital.

MATERIAL AND METHODS

The study was built based on the actions carried out by the HICS and the OM of a large hospital in Belo Horizonte, showing the experience of health teams from January 2020 to June 2021. The research was approved by the Research Ethics Committee from the Felício Rocho Hospital under the number CAAE: 50447421.0.0000.5125. The sources of information analyzed in the study were: spreadsheets from the TM service of the hospital system, MV-EPR (Magnus and Vandrecic – Electronic Patient Record), and from the indicators' portal with the purpose of tracing the number of employees hired by the regime of the Consolidation of Labor Laws (CLL) in assistance areas diagnosed with COVID-19. The variables analyzed were: sector of activity, position, infected cases and performed tests. Data from the actions taken to face the COVID-19 pandemic by the HICS and OT were collected from minutes, communications, attendance lists in training, manuals/protocols, videos, information from the quality portal, and Excel spreadsheets with infection data by COVID-19 among employees.

The HSIC was responsible for the technical evaluation of the necessary implementations, such as training, PPE, isolation areas, care flows, and notification of suspected and positive cases to public bodies. OM was responsible for evaluating positive cases among CLL employees and clinical staff. Employees and clinical staff who had a suspected case of COVID-19 were instructed to establish isolation and be tested at the institution's Emergency Department. The management of positive cases was conducted by the OM team, which made contact via telephone to apply a questionnaire and identify possible positive cases among the other employees in the sector.

In this research, only employees hired under the CLL regime of the institution were included. Outsourced employees were screened at the institution's entrance gates, and in case they had flu-like symptoms, they had to follow the flow established by their home company and seek medical attention.

RESULTS

Felício Rocho Hospital (FRH) is maintained by the Felice Rosso Foundation, created by Nicola Felice Rosso, an Italian immigrant who, in 1937, by means of a public deed, donated part of his assets to the creation of a foundation with the objective of providing hospitals in Belo Horizonte, Minas Gerais. From the laying of the foundation stone of the hospital building in 1937 until its inauguration in 1952, 15 years of struggles and efforts were passed by its founders, Américo Gasparini and several friends of Nicola Felice Rosso, who died in 1937 without seeing his wish come true, in the construction of the FRH¹⁴. Since its opening, the hospital has had a clinical staff formed by the best and most competent professionals in the city. It became a national reference in several specialties of medicine¹⁵. The 12 specialties offered in 1952 became the current Clinics, Services and Specialties.

The FRH responds to any highly complex clinical and surgical emergencies, fulfilling its mission of "taking care of people seeking quality of life"¹⁶. Currently, it has an extensive clinical staff that works in

more than 35 medical specialties¹⁴. It has 351 beds, distributed in apartments and wards, with 60 beds for adults in the Intensive Care Unit (ICU). During the COVID-19 pandemic, the number of beds dedicated to infected patients varied, over the months, according to demand. On average, 30 ICU beds and 40 ward beds were allocated to patients with COVID-19.

In the face of the COVID-19 pandemic, the HICS and the OM of the FRH has played an important role in staff training and protection, as well as taking actions to ensure patient continuity of care.

Hospital's Service of Infection Control – HICS

The year 2020 was marked by the emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which required behavioral changes in all aspects of life, society, and no differently, in the corporate environment.

On January 23, 2020, FRH received the first suspected case of COVID-19. A young man who had just arrived from Wuhan with a symptomatic, non-respiratory condition was evaluated and sent home in accordance with the guidelines of the epidemiology team of the Minas Gerais state health department. This was a critical situation since the hospital's senior management and multidisciplinary employees convened the FRH Crisis Committee (CC) to prepare for the new scenario. Given the context, the effective and proactive action of the HICS was essential.

According to the Ordinance No. 1998 from Law No. 9,431 of 1997 of the Ministry of Health, the HICS is in charge of keeping track of the occurrence of infectious adverse events and based on that, establishing epidemiological data that aid in the development of strategies to prevent these events and in the management of clinical cases. The HICS^{17,18} is required to take the following actions, among others:

- a. Management of necessary precautions for patients diagnosed with infectious diseases;
- b. Elaboration and systematic review of protocols for the prevention and treatment of infectious diseases;
- c. Participation in the standardization of medical and hospital materials and products;
- d. Coordination of educational campaigns and training for assistance and support areas;
- e. Systematic dissemination of guidelines in accordance with the updates to the technical notes and legislation.

The HICS team, made up of 7 infectious disease specialists, 4 nurses, 2 nursing technicians, and a clinical pharmacist with strong experience in infection control, collaborated with the hospital's other departments to ensure infection surveillance and management.

Actions carried out by the HICS of the FRH in the face of the COVID-19 pandemic

In view of the worldwide news about COVID-19 and its spread across the continents, the Anvisa guidelines published through the Technical Note GVIMS/GGTES/ANVISA nº 04/2020 on January 30, 2020, and the publications of other municipal health bodies, state and federal, the HICS began its specific actions to face this new and uncertain scenario in the world history. Documents and resolutions were analyzed in order to understand the information available until then and promoted safe care for working professionals and patients treated in the service¹⁹.

Thus, on February 6, 2020, the first of many meetings established between the HICS and sector leaders was held to plan actions linked to the adaptation of physical structures, service flows, availability/

planning for the acquisition of inputs, and dissemination of information for health professionals and clients, among other efforts, instituting the currently CC.

The meetings of the CC group took place periodically and recurrently throughout the year 2020 until June 2021. The meetings, initially in person, began to be held through videoconferencing, with the presentation of epidemiological data related to the institution and discussion of the needs imposed by the new reality in all sectors of the hospital. Subcommittees responsible for specific areas, such as training, standardization, and care protocols, among others, were organized. The CC allowed the necessary definitions to face the pandemic to be carried out in a collaborative and agile way, in addition to facilitating the transmission of information to other employees, doctors, patients, and companions.

Regarding the hospital's physical layout, it was necessary to modify the spaces so that patients with COVID-19 who were either suspected or confirmed did not share the waiting area, offices, inpatient beds, or any other areas with other patients receiving care there. Assistance to the first suspected cases began in mid-February 2020, with the support of the Center for Strategic Information on Health Surveillance^{20,21}. One of the biggest challenges faced by the service was obtaining total confidence from the care team regarding the use of PPE since, initially, there were several changes, supported by health agencies, in the standardization of these supplies, which possibly aggravated feelings of anguish, anxiety, and insecurity in those professionals involved in the process. In this sense, in order to promote safe care and obtain greater adherence to the protocols established by the HICS, the Training Committee (TC) was created to train professionals according to the activities listed in [Table 1](#). This committee had professional support from different sectors and was only active at the beginning of the pandemic. The accounting for training sessions was carried out by signing attendance lists. The trainings were carried out online and also *in loco*, in the assistance and administrative areas.

Table 1. On-site training conducted by HICS

Trainings	Target Audience	Nº of trained professionals
Training related to medical record document	Nurses	21
Guidelines on how to collect a <i>swab</i> sample	Nurses	27
Simulation Code 19 (COVID-19)	Professionals (doctors, residents, speech therapists, physiotherapists, social workers, psychologists)	27
Dressing/undressing and hand hygiene	Nurses	1181
Total		1229

Source: HICS/HFR, 2021

Health professionals were trained in the proper and safe use of PPE during the care of suspected and/or confirmed cases of SARS-CoV-2 infection, mask sealing tests, dressing and undressing, in addition to respiratory etiquette, hands hygiene, nasal and oropharynx swab collection, and environmental hygiene ([Table 1](#)). Actions were taken to ensure the supply of PPE in the institution such as *in-house* production

of masks and coats, purchases in large quantities, and optimization of proper use in relation to protocols and training. Due to these contingency actions carried out by the HICS, there was no lack of input in the institution to face the pandemic.

Reinforcing on-site training, educational and informative videos were released in the assistance sectors for patients with COVID-19 and announcements of standardization were instituted according to Anvisa's guidelines. Regarding the patient care routine, the care team was outfitted with a coat, a N95 mask, a pair of gloves, and a face shield; and the care was segmented into isolated areas within the Emergency Room (ER), inpatient unit and ICUs. Exclusive nursing professionals were dedicated to the areas of COVID-19 in the institution. The medical team, with exclusive professionals for COVID-19, was reserved for the ER and ICU only. In the COVID-19 inpatient units, medical staff was not exclusive.

In relation to **Table 1**, approximately 1256 employees and clinical staff were trained *in loco* in 2020. **Table 2** describes when the actions were created and implemented with the CC to face the COVID-19 pandemic. These actions continued to be applied throughout the pandemic.

Table 2. Actions taken by SCIH together with the Crisis Committee to face the COVID-19 pandemic in 2020

Month	Action
February	Definition of care flow and clinical management of COVID-19 cases
February	Definition of exclusive physical areas for the management of patients with suspected or confirmed COVID-19
February	Uptade on the flow of care in accordance with countries that have defined whether a case is suspected or confirmed, according to OMS.
March	Suspension of face-to-face meetings in favor of virtual meetings
March	Setting up standards and procedures for collecting examinations from employees suspected of having COVID-19.
March	Preparation and distribution a recommendation pamphlet for patients and companions in the event of a COVID-19 hospitalization.
March	Preparation and dissemination of posters with guidelines on the correct use of PPE according to each professional category
March	Expansion of the hygiene professional personnel to maximize environmental cleaning
March	Professionals were limited during the linical rounds
March	Suspension of appointments, exams and elective procedures
March	Limitation of the flow of professionals in areas intended for patients with COVID-19
March	Limitation and suspension of visits
March	Mandatory use of mask for companions
March	Screening of signs and symptoms at the ordinances
March	Definition of a cleaning routine for the environments dedicated to the care of a suspected or confirmed case of COVID-19

Continues on the next page

Continuation

Month	Action
March	Installation of additional gel alcohol dispenser points on hospital premises
March	Flow definition for handling the bodies of patients with suspected or confirmed COVID-19
April	Temporary suspension of interns and professionals from the risk group
April	Definition and guidance on the use of N95 masks for all professionals who provided direct patient care
April	Definition and guidance on the use of fabric masks for all professionals who did not provide direct patient care
April	Definition of routines for transporting patients with COVID-19 and for the use of elevators
April	Readjustment of the physical structure and logistics of care for non-COVID-19 patients
May	Return of interns to face-to-face work and gradual return to elective care
June	Elaboration of institutional video on dressing and undressing in COVID-19 areas
July	Implementation of the self-declaration practice by professionals about the absence of COVID-19 symptoms

Source: HICS/HFR (2021)

Note: The first internal message concerning COVID was sent on January 28, 2020

The Occupational Medicine service (OM)

OM works specifically to promote and preserve workers' health by preventing work-related accidents and is part of the Specialized Services in Safety Engineering (SSSE) and Occupational Medicine. It is up to the occupational physician to assess and detect adverse conditions in the workplace, or their absence. OM is the result of humanizing work process. The specialty appears as a branch of Labor Law, whose concern is to offer more dignified working conditions for workers and, with that, guarantee their health and physical and psychological integrity. Therefore, the objective of OM in the first place is to prevent accidents and occupational diseases. On the other hand, it also assumes a commitment to life quality and maintenance of workers' health so that the routine activities of these professionals do not represent any type of damage to their mental and physical health. The FRH OM team was composed of 2 occupational physicians, 1 nurse, 2 nursing technicians, and 3 nursing students.

Occupational Medicine interventions at Felício Rocho Hospital in response to the COVID-19 pandemic

On March 26, 2020, the first case of COVID-19 infection among hospital employees was registered at the OM service. Since then, a routine of continuous monitoring of all symptomatic and asymptomatic collaborators who are considered risk contacts in a confirmed case has been implemented. Conducts were defined for employees with suspected or confirmed COVID-19, as well as guidelines for the evaluation and diagnosis of COVID-19 in employees with HICS support. The conducts relate to:

- 1) Medical Certificate – MCT; certificate of a suspected or confirmed case must be forwarded to the MT service. The confirmed case must respect the isolation and validity of the certificate;
- 2) Declaration of cohabitation: required only for employees who have a family member who is suspected or detected to have COVID-19, according to Ordinance No. 454 of March 20, 2020, and Joint Ordinance No. 20 of June 18, 2020.
- 3) Diagnostic method: a laboratory test used in the institution for confirmation of diagnosis; during the critical period, 2020-2021, it was only RT-PCR (Reverse Transcription followed by Real-Time Polymerase Chain Reaction). All employees with a suspected case of COVID-19, that is, with the presence of influenza syndrome, performed the RT-PCR test; results were confirmed within 24 hours. In late 2021, OM began to receive other types of tests for COVID-19;
- 4) Symptomatic employees: symptomatic employees were those who had any flu-like symptoms defined by the HICS medical committee (fever, headache, dry cough, tiredness, sore throat, diarrhea, loss of taste or smell, or difficulty breathing), and should be referred immediately to the FRH's COVID-19 ER or reference emergency care unit for medical care;
 - 4.1) Collaborator with a DETECTED test result: stipulated maximum time for contact with the OM team;
 - 4.2) Employee with an UNDETECTED test result: in the case of a current medical certificate, the employee will be reassessed by the OM service.
- 5) Asymptomatic employees with home contact: two strategies were defined:
 - 5.1) Cohabitation with a DETECTED test result: elaboration and implementation of an internal protocol that establishes the flow and determines the guidelines for the removal of employees due to home contact, suspicion, or confirmation of COVID-19. The systemic document was published on the MV Quality system and disseminated through the internal communication channel (intranet), making it available to all employees.

A team of nurses and nursing technicians was mobilized in a reserved room to monitor test results in real time.

All employees with medical certificates and a diagnosis related to suspected contamination by COVID-19 had their data recorded in a follow-up worksheet entitled COVID-19 ATTESTS, shared among the OM team, in order to facilitate the monitoring of detected cases, ensure isolation, and avoid contamination of other employees. All employees with a test result for COVID-19 were contacted within a maximum period of 24 hours to answer a questionnaire, whose most important points were: contacts at risk of transmission in the 48 hours prior to the onset of symptoms, use or not of the protective measures in the period; date of onset of symptoms; and date of the last day worked.

When identifying contacts at risk of transmission, all were contacted within 24 hours, oriented, and removed (if necessary) after classification of the risk of contamination. Employees had a team of psychologists (with the presence of the occupational psychologist) in order to welcome and take care of the mental health of interested employees.
 - 5.2) Cohabitant with UNDETECTED test: for employees with undetected RT-PCR test results for COVID-19, with current medical certificate, an occupational medical assessment is carried out to verify the possibility of early return of the employee in order to reduce the impacts in patient care.

In 2020, a total of 2617 RT-PCR tests were performed, with 2,096 having undetected results and 521 having detected results for COVID-19. In 2021, until June, 1,567 RT-PCR tests were performed, 1,118 with undetected results, and 391 with detected results for COVID-19. OM's actions were daily and *in loco*; the training videos were broadcast on the institution's monitors uninterruptedly. The OM team carried out daily inspections of the prevention measures, but there was no record of the quantification of these actions. Thus, there was continuity in the sending of communications through the institution's communication channels throughout the COVID-19 pandemic.

Weekly meetings were held with managers to present the numbers of employees on leave due to COVID-19, with an alert for precautions and the established flow.

OM produced an institutional video, with the presence of employees, warning about preventive measures against COVID-19. The OM team released guidelines on preventive measures to be adopted in all sectors of the institution. In addition, with the support of general management, customer relationship management, and nursing management, the vaccination campaign against COVID-19 was carried out from January 20 to February 26, 2021, which involved employees, physicians, and collaborators, resulting in the vaccination of 3,600 people.

Quantitative breakdown of COVID-19 infections among hospital staff who work in the support sectors

Right at the beginning of the pandemic, actions were taken to contain COVID-19 and a greater number of these actions were observed in March 2020 ([Figure 1](#)).

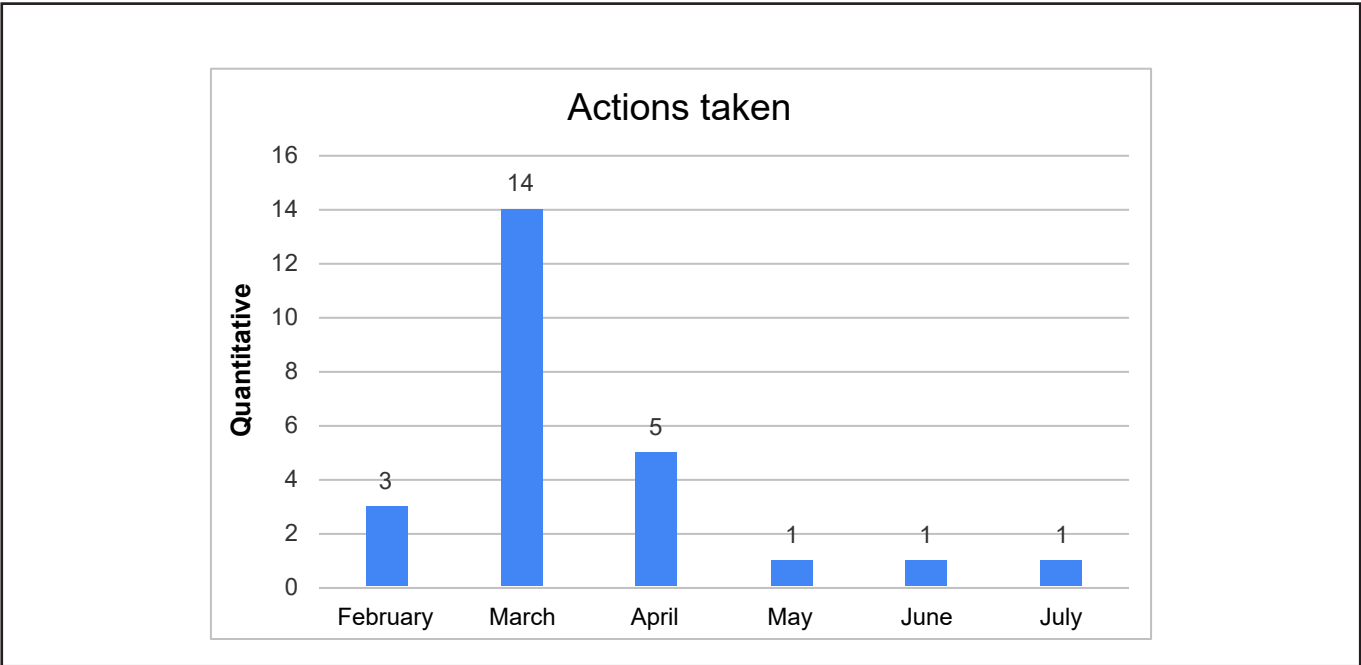


Figure 1. Number of actions carried out by the HICS in 2020
Source: Research data (2021)

During the study period, 403 employees were infected. The distribution of infected people by sector according to the number of employees is shown in [Table 3](#). The percentage of infected people ranged from

21% to 34%, with the lowest percentage in the clinical analysis laboratory and the highest in medicine, diagnostic imaging, and the inpatient unit.

Evaluating the evolution of the number of infected, it is observed that peaks occurred in June and July 2020 and in December 2020 and January 2021. (**Figure 2**).

Table 3. Relationship between the number of infected people per sector and the number of employees

Sector	Infected (n)	Employees (mean)	%
Medicine and Diagnostic Imaging	46	135	34%
General Intensive Care Center	83	273	30%
Hospitality	65	223	29%
General emergency care	37	130	28%
Clinical Laboratory	14	66	21%
Pediatric emergency room	8	24	33%
Inpatient unit	150	442	34%

Note: Data analyzed only among employees admitted according to the CLL system (Consolidated Labor Laws)

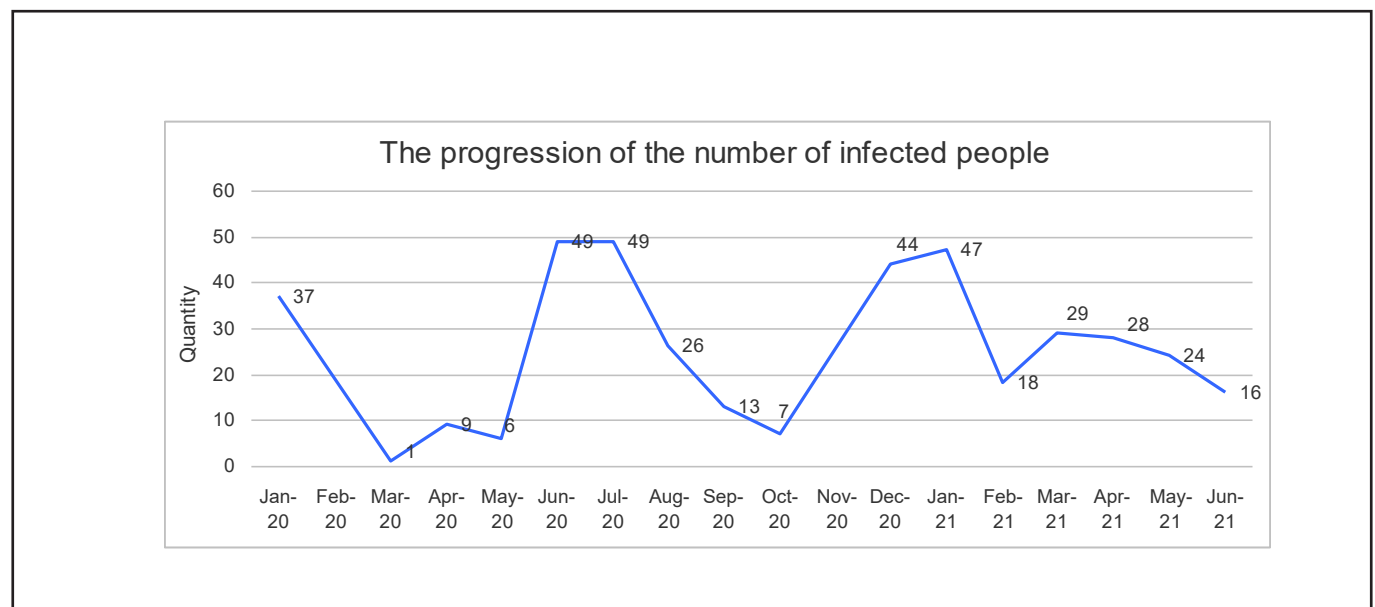


Figure 2. Evolution of the number of infected people during the research period
Source: Research data (2021)

DISCUSSION

The performance of the HICS in the context of COVID-19 contributed in several aspects to the sedimentation of the objectives of the service and also brought lessons that were assimilated and instituted as work practices. Creating collaborative and interdisciplinary work processes was an

extremely useful learning experience. This understanding has been disseminated in other actions of the service, such as meetings, audits, and validation of flows. Another important aspect was the involvement of senior management and the engagement of professionals from the most diverse areas, which promoted a work structure based on roles and responsibilities, leading to the achievement of objectives. OM's performance in the context of COVID-19 reaffirms the importance of working with prevention and health promotion with all health workers at the FRH, following the recommendations and care established by the bodies responsible for establishing guidelines in the face of the pandemic, such as the Ministry of Health and the WHO. SARS-CoV-2 infection rates among FRH staff were comparable to infection rates among healthcare professionals²². There were no deaths caused by COVID-19 among hospital staff. Four of the infected individuals required intubation and admission to the ICU. All these patients recovered.

According to the Ministry of Health, in Brazil, until June 28, 2021, 443,962 cases of influenza-like syndrome suspected of COVID-19 in health professionals were reported in the e-SUS, among which 120,240 (27.1 %) were confirmed. Among the health professions with the highest number of confirmed cases of COVID-19, nursing technicians/assistants (35,587; 29.6%), nurses (20,217; 16.8%), physicians (12,745; 10.6%), community health agents (6,353; 5.3%) and pharmacists (6,339; 5.3%)²². After June 2021, the actions of HICS and OM continued to be carried out at the institution. The number of severe cases among employees and clinical staff was different in the period before and after vaccination. There were only three significant instances among the employees, and there were no reports of major cases following immunization.

The FRH provided care to patients with COVID-19 cases in the emergency room and also received transfers from several cities in Minas Gerais. All patients with clinical suspicion for COVID-19 were tested and kept isolated until the diagnosis was confirmed. Thus, the actions of HICS and OM were important for the protection of both patients and staff. All COVID-19 frontline personnel were equipped and trained to assist both in a safe and effective manner.

CONCLUSION

The current study is significant in terms of extending information regarding preparing in the case of a pandemic like COVID-19 in the setting of a big hospital. Reporting on information and experiences acquired is critical for the creation of strategies to prevent COVID-19 contamination of staff in HFR and other institutions. For the nursing community, the report describes the important role played by the HICS and MT teams in facing the COVID-19 pandemic, which reinvented itself to provide better care to patients.

The HICS and the OM have competent staff who are willing to help, which has led in the establishment of various pandemic-fighting initiatives. Contamination rates among employees of healthcare areas in the HFR were low due to the actions implemented by HICS and OM that positively influenced the avoidance of contamination by COVID-19 in this hospital.

Among the lessons learnt, the need of communal learning in confronting the difficulties posed by the pandemic shines out in a situation of enormous uncertainty, fear, and grief. Positive legacy competencies include resilience, flexibility, empathy, and transdisciplinary performance.

The epidemic enforced the necessity for physical distancing as a safety measure, which is now advocated globally; ironically, we are experiencing a unique synergy and harmony, maybe as a result of meditation on the significance of communal building.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

FUNDING

The authors did not declare.

ACKNOWLEDGEMENTS

The authors did not declare.

AUTHORS' CONTRIBUTION

Design and planning, analysis and interpretation of data; drafting and critical review of the content: Angela Aparecida Silva Vieira, Suelaine Antônia de Carvalho, Angela de Souza Floriano, Gabriela Miranda de Oliveira Castro e Amanda Damasceno de Souza. Design, analysis and interpretation of data; critical review of content: Aleida Nazareth Soares. Design and critical review of content: Adelino de Melo Freire Júnior. All authors read and approved the final version of the manuscript.

REFERENCES

1. Wei XS, Wang XR, Zhang JC, Yang WB, Ma WL, Yang BH et al. A cluster of health care workers with COVID-19 pneumonia caused by SARS-CoV-2. J Microbiol Immunol Infect. 2021;54(1):54-60.
<https://doi.org/10.1016/j.jmii.2020.04.013>
2. McMichael TM, Currie DW, Clark S, Pogosjans S, Kay M, Schwartz NG et al. Public Health – Seattle and King County, Evergreen Health, and CDC COVID-19 Investigation Team. Epidemiology of Covid-19 in a Long-Term Care Facility in King County, Washington. N Engl J Med. 2020;382(21):2005-11.
<https://doi.org/10.1056/NEJMoa2005412>
3. McIntosh K. Coronavirus disease 2019 (COVID-19): Clinical features. [Internet]. UpToDate. Philadelphia: Wolters Kluwer Health;c2020. [Accessed on 2020 Nov 16]. Available from:
<https://www.uptodate.com/contents/coronavirus-disease-2019-covid-19-clinical-features>
4. Johns Hopkins University & Medicine. The Johns Hopkins Coronavirus Resource Center (CRC). COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU). [Internet]. Baltimore, MD: JHU; c2021. [Accessed on 2022 Jan 26]. Available from:
<https://coronavirus.jhu.edu/map.html>

5. Aquino EML, Silveira IH, Pescarini JM, Aquino R, Souza-Filho JA, Rocha AS et al. Social distancing measures to control the COVID-19 pandemic: potential impacts and challenges in Brazil. *Cien Saude Colet*. 2020;25(suppl 1):2423-46.
<https://doi.org/10.1590/1413-81232020256.1.10502020>
6. Candido DS, Claro IM, de Jesus JG, Souza WM, Moreira FRR, Dellicour S et al. Evolution and epidemic spread of SARS-CoV-2 in Brazil. *Science*. 2020;369(6508):1255-60.
<https://doi.org/10.1126/science.abd2161>
7. Croda J, Oliveira WK, Frutuoso RL, Mandetta LH, Baia-da-Silva DC, Brito-Sousa JD et al. COVID-19 in Brazil: advantages of a socialized unified health system and preparation to contain cases. *Rev Soc Bras Med Trop*. 2020;53:e20200167.
<https://doi.org/10.1590/0037-8682-0167-2020>
8. Ministério da Saúde (BR). COVID19: Painel Coronavírus. Atualizado em: 22/11/2021 19:50. [Internet]. Brasília, DF: MS; 2021. [Accessed on 2021 Nov 16]. Available from:
<https://covid.saude.gov.br/>
9. Mcintosh K. Coronavirus disease 2019 (COVID-19): Epidemiology, virology, and prevention. [Internet]. UpToDate. Philadelphia: Wolters Kluwer Health; c2020. [Accessed on 2021 Nov 16]. Available from:
<https://www.uptodate.com/contents/coronavirus-disease-2019-covid-19-epidemiology-virology-and-prevention>
10. Souza AD, Fernandes MR, Freire Junior AM. Atuação do Bibliotecário Clínico em tempos de pandemia da COVID-19. *Rev. Bras Bibl Doc*. 2021;17:1-20. Available from:
<http://hdl.handle.net/20.500.11959/brapci/158420>
11. Ministério da Saúde (BR). Sistema Único de Saúde. Vacinação. [Internet]. Brasília: MS; 2022. [Accessed on 2022 Nov 05]. Available from:
<https://www.gov.br/saude/pt-br/coronavirus/vacinas/plano-nacional-de-operacionalizacao-da-vacina-contra-a-covid-19>
12. Souza DO. A saúde dos trabalhadores e a pandemia de COVID-19: da revisão à crítica. *Vigil Sanit Debate*. 2020;8(3):125-31.
<https://doi.org/10.22239/2317-269X.01627>
13. Jackson Filho JM, Assunção AA, Algranti E, Garcia EG, Saito CA, Maeno M. A saúde do trabalhador e o enfrentamento da COVID-19. *Rev Bras Saúde Ocup*. 2020;45:e14.
<https://doi.org/10.1590/2317-6369ED0000120>

14. Resende MÂF, Martins LL, Gouveia MLC. Memorial: Fundação Felice Rosso: 75 anos de Benemerência, 60 anos de Medicina. Belo Horizonte: Logos; 2012. 323p.
15. Souza AD. A Biblioteca do Centro de Estudos do Hospital Felício Rocho: um olhar para a atuação do bibliotecário clínico. Ci Inf Rev. 2020;7(3):134-52.
<https://doi.org/10.28998/cirev.2020v7n3h>
16. Hospital Felício Rocho. Quem somos. [Internet]. Belo Horizonte; 2022. [Accessed on 2022 Feb 25]. Available from:
<https://www.feliciorocho.org.br/>
17. Ministério da Saúde (BR). Portaria nº 2616, de 12 de maio de 1998. Programa de Controle de Infecção Hospitalar. [Internet]. [Accessed on 2021 Nov 04]. Available from:
https://bvsms.saude.gov.br/bvs/saudelegis/gm/1998/prt2616_12_05_1998.html
18. Presidência da República (BR). Lei nº 9.431, de 6 de janeiro de 1997. Dispõe sobre a obrigatoriedade da manutenção de programa de controle de infecções hospitalares pelos hospitais do País. Diário Oficial [da República Federativa do Brasil]. Brasília, DF, 07 jan 1997. Seção 1(266):1.
19. Agência Nacional de Vigilância Sanitária – ANVISA. Nota Técnica GVIMS/GGTES/ANVISA nº 04/2020. Orientações para serviços de saúde: medidas de prevenção e controle que devem ser adotadas durante a assistência aos casos suspeitos ou confirmados de infecção pelo novo coronavírus (SARS-CoV-2). Brasília; 2021. [Accessed on 2021 Nov 04] Available from:
https://www.gov.br/anvisa/pt-br/centraisdeconteudo/publicacoes/servicosdesaude/notas-tecnicas/nota-tecnica-gvims_ggtes_anvisa-04_2020-25-02-para-o-site.pdf
20. Superintendência de Vigilância Epidemiológica. Subsecretaria de Vigilância em Saúde. Portal da Vigilância em Saúde. Belo Horizonte: SES; 2021. [Accessed on 2021 Nov 25]. Available from:
<http://vigilancia.saude.mg.gov.br/>
21. Secretaria de Estado de Saúde de Minas Gerais (MG). Home Page. Belo Horizonte: SES; 2021. [Accessed on 2021 Nov 25]. Available from:
<https://www.saude.mg.gov.br/>
22. Ministério da Saúde (BR). Secretaria de Vigilância em Saúde. Doença pelo Novo Coronavírus – COVID-19 Boletim Epidemiológico Especial; 2021:69. [Accessed on 2021 Nov 25]. Available from:
https://www.gov.br/saude/pt-br/centrais-de-conteudo/publicacoes/boletins/epidemiologicos/covid-19/2021/69_boletim_epidemiologico_covid_2junho.pdf

