ISSN-e [2763-8847]

Global Clinical Research Journal

REVIEW ARTICLE

Public health management during the COVID-19 pandemic

Gestión de la salud pública durante la pandemia de COVID-19

Gestão da saúde pública durante a pandemia por COVID-19

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Abstract

The aim was to identify the main problems faced by Brazilian public health management during the COVID-19 pandemic. This was a narrative review of literature, exploratory, and descriptive. Complete studies available for free, published in Portuguese, and conducted in Brazil were included. The time frame used was studies conducted since December 2019. The results were presented in sections that detailed Public Administration, Public Health Management, the Unified Health System, and Public Health Management during the pandemic. The following responsibilities for managers were identified: establishing a governance structure and coordinating the crisis response; planning actions for different phases of the epidemic; financing the health system to support the actions developed; information management and risk communication; managing health professionals; supplying and managing strategic supplies; containment actions to reduce transmission; coordinating the health care network; managing dead bodies; and mitigating the economic, social, and psychological consequences. The impacts supported the construction of a new public administration, emphasizing efficiency and management based on the perception of the complexity of the environment and the problems to be faced.

Descriptors: COVID-19; Public Administration; Unified Health Service; Health Policies, Planning and Administration; Health Administration.

How to cite this article:
Aquino GL, Faker JN, Souza RA, Silva ALNV. Public health management during the COVID-19 pandemic. Glob Clin Res. 2024;4(2):e49. https://doi.org/10.5935/2763-8847.20210049

Submission: 05-12-2023
Approval: 08-27-2023

Resumén

El objetivo fue identificar los principales problemas que enfrentó la gestión de la salud pública brasileña durante la pandemia de COVID-19. Esta fue una revisión narrativa de la literatura, de naturaleza exploratoria y descriptiva. Se incluyeron estudios completos disponibles de forma gratuita, publicados en portugués y realizados en Brasil. El marco temporal utilizado fueron estudios realizados desde diciembre de 2019. Los resultados se enumeraron en secciones que buscaron explicar en detalle la Administración Pública, la Gestión de la Salud Pública, el Sistema Único de Salud y la Gestión de la Salud Pública durante la pandemia. Se identificaron las siguientes responsabilidades para los gerentes: establecer una estructura de gobernanza y coordinar la respuesta a la crisis; planificar acciones para diferentes fases de la epidemia; financiar el sistema de salud para apoyar las acciones desarrolladas; gestión de la información y comunicación de riesgos; gestionar profesionales de la salud; suministrar y gestionar suministros estratégicos; acciones de contención para reducir la transmisión; coordinar la red de atención médica; gestionar cadáveres; y mitigar las consecuencias económicas, sociales y psicológicas. Los impactos apoyaron la construcción de una nueva administración pública, enfatizando la eficiencia y la gestión basada en la percepción de la complejidad del entorno y los problemas a enfrentar.

Descriptores: COVID-19; Administración Pública; Servicio Unificado de Salud; Políticas, Planificación y Administración de la Salud; Administración de la Salud.

Resumo

Objetivou-se identificar os principais problemas enfrentados pela gestão pública em saúde brasileira na pandemia do COVID-19. Trata-se de revisão narrativa da literatura, de caráter exploratório e descritivo. Foram incluídos estudos completo disponíveis de forma gratuita, publicados em português e desenvolvidos em território brasileiro. Foi utilizado o recorte temporal de estudos realizados a partir de dezembro de 2019. Os resultados foram elencados em seções que procuraram explicar com detalhes a Administração Pública, Gestão Pública em Saúde, Sistema Único de Saúde e a Gestão Pública em Saúde em tempos de pandemia. Foram encontradas as seguintes atribuições para os gestores: estabelecimento de estrutura de governança e coordenação da resposta à crise; programação de ações para diferentes fases da epidemia; financiamento do sistema de saúde para dar suporte às ações desenvolvidas; gestão da informação e comunicação de risco; gestão de profissionais de saúde; abastecimento e gestão de insumos estratégicos; ações de contenção para reduzir a transmissão; coordenação da rede de atenção à saúde; gestão de cadáveres; e mitigação das consequências econômicas, sociais e psicológicas. Os impactos subsidiaram a construção de uma nova administração pública, dando ênfase à eficiência, e a gestão baseada na percepção da complexidade do ambiente e dos problemas a serem enfrentados.

Descritores: COVID-19; Administração Pública; Serviço Único de Saúde; Políticas, Planejamento e Administração em Saúde; Administração em Saúde.

Introduction

This pandemic has been a challenge not only for healthcare administrators but also for healthcare systems worldwide. Therefore, this study presents an overview of the problems faced by public health administrators during the COVID-19 (Coronavirus Disease 2019) pandemic. For readers' understanding, the study has been divided into sections that seek to explain in detail Public Administration, Public Health Management, the Unified Health System, and Public Health Management in times of pandemic. In Brazil, the Unified Health System (SUS) has transformed in recent decades. Current circumstances demand changes both in terms of professional training and in paradigm shifts in public health management, often rooted in biomedical and hospital-centric models[1].

In the Unified Health System (SUS), management activity is framed as an interdisciplinary work process, with technical, political, and social determinations. These professionals' actions should aim to promote health and implement the SUS principles: comprehensiveness, universality, equity, participation and social control, intersectoral care, resolution, and humanization of care. Therefore, understanding health management implies learning and developing managerial skills and competencies, which can ensure management is consistent with the entire legal framework that underpins our SUS[2].

In Brazil, each federative unit has the autonomy to maintain and guarantee the health of individuals within its territory. Thus, each Brazilian state has the governance capacity to quickly and effectively organize healthcare for its citizens. The COVID-19 pandemic, for example, has changed healthcare management, and from this perspective, this article aims to identify the main challenges facing Brazilian public health management during the COVID-19 pandemic.

Methodology

The methodology adopted to carry out this research was a narrative review of the literature, of an exploratory and descriptive nature, to answer the following guiding

question: “What are the main problems of public health management in the context of the COVID-19 pandemic?”.

The search was conducted in the Scientific Electronic Library Online (SciELO), Google Scholar, and Coleciona SUS databases. Eligible studies were studies made available in full for free, conducted in Brazil, published in Portuguese, and that answered the proposed research question. The following descriptors were used as a search strategy: "COVID-19," "Health Policies, Planning, and Administration," and "Health Administration”.

Scientific articles, editorials, theses, dissertations, manuals, and protocols were included. The timeframe used was studies conducted since December 2019. This choice is justified by the period of emergence and identification of the disease.

The level of evidence was not considered an eligibility criterion because this is a new topic, with limited likelihood of finding articles with a higher level of evidence.

Results and Discussion

To conduct the analysis, the selected materials were synthesized using a narrative methodology with a reflective and critical approach. The studies were discussed in thematic categories.

In the "Public Administration" category, six studies were selected; in the "Public Health Management" category, five studies were selected; in the "Unified Health System" category, 11 studies were selected; and finally, in the "Public Health Management in Times of Pandemic" category, 33 studies were selected.

Public administration

Brazilian public administration is governed by five guiding principles: legality, impartiality, morality, publicity, and efficiency.

The principle of legality establishes the supremacy of written law, since without it, the Democratic Rule of Law could not exist. According to this principle, all state action must be supported by law, supported by the constitutional text. It is important to emphasize that guaranteeing legality in the actions of public authorities also depends on the quality of the laws. It is important to emphasize that laws must be drafted in compliance with current legislative norms and techniques. It is crucial to be aware that legality, legitimacy, and justice are different concepts and should not be confused or characterized as similar. To defend the democratic rule of law, the principle of legality is essential; however, it does not guarantee the legitimacy and justice of the rules. Technically perfect laws can be considered illegitimate if they do not emanate from the legitimately constituted power to legislate. However, laws can be legal and legitimate but generate social injustices, such as widening the gap between rich and poor or reducing social services for the most needy[3-5].

Regarding the second principle, impartiality, the public servant - in this case, the public administrator - must understand that they do not act on their own behalf, but on behalf of the government, considering the position they hold within the administration, whether tenured, collective, or commissioned. Thus, the author of all public acts will always be the State, and the administrator who carries them out is merely the agent. In this scenario, all administrative acts must be impersonal, both in the sense of the person acting, which is the State and not the agent (manager), and in the objective of the action, which must be in public interest, not in private interest[3-5].

Regarding the principle of morality, it derives from legality and is a direct attribute of public officials. Considering this principle, public servants must demonstrate in their behavior the moral virtues considered essential by society. According to the principle of morality, officials, representatives of public administration, are required to demonstrate integrity and honesty in their conduct, not only during their work but also as citizens[3-5].

Regarding the principle of publicity, it is intrinsically linked to clarity and social visibility, which should encompass all acts of public administration. All acts of the State must be public, since they emanate from the government, are in the public interest, are for the public, and consequently must be publicly known. There are exceptions regarding the publicity of some decisions, as they require secrecy to be effective, and certain processes require private sessions to be successfully executed. It is crucial to ensure, in all situations, that decisions involve the interests of citizens and are made under conditions favorable to the achievement of the public interest, avoiding all configurations that affect private interests. In general, public acts require publicity. Even if oral statements exist, speeches are an important means of political communication. However, publicity for actions should primarily be in written form. The wording must comply with the rules and procedures arising from the principles of legality. Furthermore, bidding notices, among other things, are required to be published in widely circulated local media outlets to ensure compliance with the principle of publicity. Thus, acts of public authority should only come into effect after publication in the Official Gazette, that is, from the date they become publicly available[5,6].

The final principle to be addressed is efficiency, which relates to the economic functioning of public administration. Taxes paid by citizens, used to fund administrative functions, must be used efficiently, that is, with the best cost-benefit ratio. In this sense, contributions must not only be used legally, impartially, morally, and publicly, but also efficiently[3-5].

In addition to the principles listed, public administration involves different organizations and types of work, thus requiring different coordination and control mechanisms. This entire context in Brazilian territory contributes to the occurrence of numerous bureaucratic processes[7,8].

The organizational performance of public entities is intrinsically linked to the high levels of bureaucracy and centralization of public administration, which contributes to limiting local autonomy. Regarding public health management, decentralization is one of the system's distinguishing principles, even if it is not yet adequately implemented. In health management, decentralization

implies establishing a relationship of correspondence between the public and private sectors, the federal government, the state, and the municipalities[7,8].

Public health management

Public health management involves connecting needs and demands with policy formulation and implementation, and work organization, focusing on mobilizing resources that need to be combined, whether financial, professional, or municipal equipment resources. Therefore, when exercising public health management, several characteristics must be considered, such as: governance; financing; professionalization, information technology; people management; and organization of care[8,9].

Governance, in the public sphere, originates from the discrepancy between public policies and management, and is understood as the act of achieving efficient actions with public funds. It thus involves a set of mechanisms and practices capable of empowering the system, where results will be seen in institutional expansion resulting from improved financial resource acquisition and human resource productivity[8,10,11].

Another aspect that must be considered in public health management is financing, which encompasses all economic and financial aspects of management. Adequate financing must be ensured, considering the volume of resources allocated, principles of equity and distribution, the source and origin of resources, and the payment method applicable to services. The sustainability of the public sector should be prioritized, focusing on economic balance and the quality of care provided. Regarding professionalization, public management must be operated by specialized, trained professionals with technical expertise focused on improving results.[8,9].

Information Technology (IT) is another important attribute for healthcare management, as information systems generate data capable of supporting decision-making processes, whether strategic, tactical, or operational. Furthermore, IT contributes to integration and communication between services, healthcare networks, and even the population. Regarding people management, the entire healthcare system organization establishes that work management is closely linked to professionals, who are responsible for both the efficiency and quality of processes and the results achieved[6,8,9].

In health management, the organization of care involves everything from the healthcare service's care profile, the user's socioeconomic profile, entry criteria and the relationship between the units that make up the system, regulatory mechanisms, monitoring of admission from reception to discharge, and the management of critical care resources (beds, equipment, qualified specialist teams, new technologies, among others)[8,9].

In addition to the attributes listed, others should be understood as service objectives. These attributes encompass structures and processes and support improvements in management models, including quality, research, development, and teaching; inclusion in the Unified Health System (SUS); efficiency; and patient-centered care. Quality is a constant management objective, especially in healthcare services. It involves: implementation of quality structures and processes, continuous improvements, compliance with standards and service oversight, process and external accreditation, ongoing attention to user satisfaction, high-quality medical records, and implementation of care management tools[4,6,8,9].

Another attribute considered an objective of services is research, development, and teaching, as these contribute to the generation of knowledge and technologies, both in healthcare and organizational settings, and to the training and development of workers. It is up to public managers to recognize that while managing public health units or services, these will be part of the Unified Health System (SUS), and that this system has unique characteristics that distinguish it from all other public services[8,9].

Unified Health System

Health systems are defined as the set of activities whose primary purpose is to promote, restore, and maintain the health of the population. In this context, health systems are committed to ensuring access to the goods and services available in each society, for the maintenance and recovery of individual health[12].

The establishment of the Brazilian healthcare system was driven in the 19th century by social movements that objected to the precarious living conditions to which they were subjected. There was a real exclusion of certain classes, and these classes were crucial for the consolidation of citizenship. With protest movements and intense political mobilization, progress was made toward establishing rights and building a system that served all Brazilians[13,14].

In Brazil, the first attempt to create a health system was in 1975 with Law No. 6,229, which created the National Health System. This system sought to correct the disorganized institutional multiplicity in the public sector. However, it was the Alma-Ata Conference in 1978 that was the major milestone that propelled health care in Brazil and worldwide. In this sense, the Unified Health System (SUS) emerged from a strategy to provide universal health coverage. Thus, in 1988, with the establishment of the Federal Constitution, with the participation of congressmen and intellectuals of the time, a health system was formally created in articles 196 to 200, which would be guided by the organizational principles of decentralization, comprehensive care, and community participation[15,16].

As a result of the 1988 Constitution, Law No. 8,080, of September 1990, was drafted between 1989 and 1990. It establishes the conditions for health promotion, protection, and recovery. Also known as the law creating the Unified Health System (SUS), it establishes universal and equitable access to services, comprehensive care, and social participation. The SUS's main objective is to efficiently optimize the health conditions of the Brazilian population by humanizing the services provided. Based on the principle that "health is a right for all and a duty of the state," with responsibilities established between the federal, state, and municipal spheres[16,17].

The principle of universality guarantees all Brazilians access to public health services, regardless of their profession or contribution. Comprehensiveness ensures that care is based on health needs, includes preventive and assistance actions, guarantees access at all levels of complexity, and implements a comprehensive approach to individuals. The principle of equity seeks to recognize differences in living and health conditions and people's needs, considering that the right to health encompasses social differences and must address diversity. This principle is directly related to the concepts of equality and justice. Social participation refers to the direct involvement of society in both the planning, monitoring, and evaluation of health services. In the case of health services, health councils and conferences represent users and are organized at various levels of government: municipal, state, and national[17].

In this context, the challenges facing the SUS are constantly related to various circumstantial and structural obstacles, such as the size of the country and its complexity, social inequalities, and the persistence of the medical-care model that hinders the operationalization of care[15].

Public health management in times of pandemic

On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a public health emergency of international concern. Due to its high prevalence and long incubation periods, often without symptoms, SARS-CoV-2 has infected millions of people worldwide, causing the COVID-19 pandemic[18-20].

COVID-19 infects only mammals, is highly pathogenic, and can cause respiratory and gastrointestinal syndromes, ranging from the development of common cold symptoms to severe infections in at-risk groups, the elderly, and children[21].

As of September 10, 2021, 223,022,538 confirmed cases of COVID-19 and 4,602,882 deaths had been reported to the WHO. As of September 6, 2021, a total of 5,352,927,296 vaccine doses had been administered. In Brazil, as of September 10, 2021, 20,974,850 confirmed cases of COVID-19 and 585,846,000 deaths had been reported. 205,866,758 doses of the COVID-19 vaccine have been administered. These figures highlight how the pandemic threatens decisive aspects of our society. The debate between "lives versus the economy" has been, and continues to be, complex and highly challenging for any administration[20,22,23].

Various sectors, such as public safety, education, the economy, and politics, faced significant challenges during the COVID-19 pandemic. Among its many roles, public safety was responsible for addressing the high levels of violence, particularly violence against women, which increased considerably, requiring additional work from the judiciary[24].

Researchers[25] analyzed information on violence against women in the São Paulo state public database between March and May of 2019 and 2020. The authors observed an increase in violence involving crimes against sexual dignity. A systematic review showed that femicide rates were higher compared to periods before the COVID-19 pandemic, reinforcing that social isolation makes victims vulnerable due to the new routine at home and the inability to go out[26].

In the education sector, we saw setbacks in teaching, due to the disconnection of students and families from school, difficult pedagogical practices involving remote classes, compromised teacher training, and even neglected students with disabilities. Adolescents and children out of school were isolated in virtual environments without parental supervision, and this change often affected their mental health and emotional balance. Furthermore, the food provided by the school was often the only opportunity for adequate nutrition for these children[27].

The country's economy was caught off guard, primarily by the initial denialism of the federal government and by some members of society. The lack of preparation to anticipate the impacts the virus could cause was crucial, for action was taken only when everything was already out of control. Strategies to contain the spread were limited to social isolation and mass testing, but social isolation was not viable for the economy[28].

In general, authors[29] highlight that the Brazilian economic sector was affected, with significant consequences, in three periods. Initially, there was a reduction in investor expectations, the interruption of some supply chains, and a reduction in exports. The second period was due to crisis mitigation measures, including the expansion of credit lines for micro and small businesses and the granting of Emergency Aid to self-employed workers. And the third period, with the resumption of economic activity and the reinstatement of the government's neoliberal reforms, such as fiscal, tax, and economic liberalization, among others.

In the context of Brazilian politics, the study highlights that initially, there were significant political tensions that resulted in controversies over social isolation and inappropriate medication use. These controversies caused extensive and significant damage to the fight against the disease and are still reflected in the country's vaccination planning and implementation[30].

According to research[31], the COVID-19 epidemic demanded immediate planning from the Ministry of Health, and the government's actions revealed contradictions between the presidency and the aforementioned ministry. These contradictions translated into a policy with a leading role for governors, resulting in a dilemma between the economy and health, and the militarization of the Ministry of Health, with military personnel filling its technical staff. The author also highlights that in the first four months after the first case of COVID-19 was recorded, the Ministry of Health left the frontline of action, and the states carried out the main response measures by purchasing materials and services from the private sector.

It is clarified that Brazilian health during this period of the COVID-19 pandemic has exposed the existing fragility of a system coordinated by federative entities, presenting difficulties related to insufficient financial and human resources, such as a deficit in retention, different forms of

hiring, precarious work, and low investment in continuing education[33,34].

The state of Amazonas, for example, stood out negatively in its management of the COVID-19 crisis. The state ran out of oxygen to meet the needs of the population affected by the disease and lacked beds in Intensive Care Units (ICUs). The author emphasizes that this problem is the result of inadequate prevention measures in an extremely unfavorable context. This situation stems from the unpreparedness of managers to anticipate complications and make decisions, coupled with very poor social and health indicators, with individuals living in extreme poverty, inadequate housing, and bathrooms without running water. This demonstrates that the population's living conditions were inadequate for maintaining the necessary hygiene measures[35].

For public health management, a technical note was developed in partnership with the Getúlio Vargas Health Foundation, Center for Studies in Health Planning and Management, systematizing recommendations and practices observed in national and international experiences. This standard aims to highlight key points to assist SUS managers at the local/regional level in responding to the COVID-19 pandemic. Some responsibilities for managers include: establishing a governance structure and coordinating the crisis response; planning actions for different phases of the epidemic; financing the health system to support the actions taken; managing information and risk communication; managing health professionals; supplying and managing strategic inputs; implementing containment actions to reduce transmission; coordinating the health care network; managing corpses; and mitigating the economic, social, and psychological consequences[36].

Regarding governance, Rio Grande do Sul provides an important example during the COVID-19 pandemic. The state created a response plan using a predefined coordination system, the "COVID-19 Prevention and Response Office." The authors demonstrated that this organization enabled appropriate coordination, better use of resources, and optimized results. This movement also ensured community awareness of the actions implemented and further strengthened efforts beyond the pandemic. The strategies adopted by the State included: training professionals according to their roles and responsibilities; monitoring changes to specific emergency management protocols; distributing material resources; maintaining updated records and reports; creating "SOLIDARIZA" T-shirts to promote social awareness; and collecting food for those affected by the pandemic. Regarding the second task, planning actions for different phases of the epidemic, Rio Grande do Sul adopted controlled distancing, classified by yellow, orange, red, and black flags. Yellow indicates a milder situation, with more flexible measures; orange indicates medium risk; red indicates high risk; and black requires greater restrictions by regions[37].

To define the colors, the state listed two key metrics: spread and response capacity, with daily collections and updates valid for the following week. These were mixed, modulated, and agreed-upon strategies to balance the priority of life with economic recovery, as regions experienced transmission rates and had different response capacities. Thus, the level of distancing was tied to the health response capacity and the pandemic's behavior within the territory. The classification by flags was widely used by Brazilian states as a measure of social distancing. As new cases emerged, each municipality and state released weekly business schedules[38].

Regarding the responsibility for managing the healthcare system's funding to support the actions implemented, the SUS faced a critical situation in meeting the demand generated by the COVID-19 pandemic. The worst-case scenario was in the North and Northeast regions of the country, particularly regarding ICU beds and care deficits. The authors presented three key points for the healthcare system in the context of the pandemic. The first concerns the need to reduce the rate of COVID-19's spread among the population, contain its spread to alleviate pressure on the healthcare system, and reorganize supply. The second addressed expanding the number of available beds. Even with contributions from the private sector, both sectors lacked sufficient capacity in several macro-regions. Of particular note is the construction of field hospitals, both in locations where there were healthcare gaps and in those that presented various weaknesses even before the pandemic. The third point concerns the regionalized organization of health services, which, while adequate in situations of normal demand, during the pandemic, this design created additional challenges, especially in the distance patients travel to receive care[39].

Regarding the role of information management and risk communication, it is noteworthy that gathering information from reliable databases available for public consultation supports timely decision-making by managers. In their study, the authors presented public databases and highlighted:

> *"1) Data from the Ministry of Health's Coronavirus Dashboard, updated daily, which highlights epidemic waves. 2) The Civil Registry Transparency Portal, with recent data, provides information on COVID-19 mortality rates. 3) Cases reported by the Influenza Epidemiological Surveillance Information System (Sivepgripe), confirmed primarily by laboratory testing, show a predominance by sex, age group, race/white color, urban residence, presence of comorbidities, higher incidence of hospitalizations, and lower intensive care unit use. This last database, in addition to the first wave, records only the first eight epidemiological weeks of the second wave"*[40:3].

In Campo Grande, we have the website http://www.campogrande.ms.gov.br/sesau/vacinacg/, which offered real-time information on the current situation in the municipalities and also provided guidance on the progress of vaccination for the entire population[41].

Although several databases and information systems are available in Brazil, it is well known that the technological capacity of information is limited. It is noteworthy that when data is not managed, it can be used to disseminate false information and cause harm. During the COVID-19 pandemic, the dissemination of false content

contributed to the discrediting of science and global health institutions[42].

Depending on the role of managing health professionals, study[31:8] highlighted an important situation:

> *"The COVID-19 pandemic arrived in Brazil after the first year of the most important labor reform measures and the loss of social security rights. This was one of the factors that made it possible to hire healthcare professionals on an intermittent, temporary, flexible, and outsourced basis, without any connection to a state career plan. Medical companies, cooperatives, philanthropic entities, and nonprofit organizations (OSSs) hired professionals to care for those affected by the epidemic. With this healthcare workforce management model, hiring professionals occurred mostly on a shift basis, under temporary contracts, and without guaranteed fundamental labor rights. With the evident precariousness of healthcare professionals' employment relationships, as several workers fell ill in the services, these workers were not immediately replaced, as theoretically hoped. Sick professionals simultaneously left several healthcare services short-staffed. This professional, now ill, is on the front lines of many services—a common occurrence among healthcare workers who have multiple employment relationships and work in various services to supplement their income from multiple shifts. Once infected with COVID-19, healthcare professionals hired temporarily by OSSs, cooperatives, or philanthropic entities had no right to leave work, leaving them socially destitute or even unemployed".*

In this regard, researchers[43] found that there were many deaths among healthcare workers, and nursing professionals were the most affected. They also emphasized that the healthcare sector has been facing challenges such as job insecurity, scarce hiring, and limited material resources, creating hardships for professionals on the front lines[44].

Regarding the allocation of supply and management of strategic inputs, it is argued that in the context of the COVID-19 pandemic, dynamic and innovative inventory management strategies become relevant, as well as the application of quality management tools such as control charts for decision-making, to ensure the safety and quality of care for patients and workers. They emphasize that the success of the management strategy is based on well-aligned teamwork, with defined responsibilities, effective collaboration and communication, and the use of reliable indicators. The authors described the experience of a secondary-level hospital and outpatient healthcare service in managing Personal Protective Equipment (PPE) and medication inventories. This study highlighted the need for actions that emphasize PPE and medication recommendations for COVID-19 treatment, as well as the definition of institutional standardization protocols. Also essential is training the healthcare team on the appropriate and rational use of supplies, calculating estimated daily consumption of critical items, daily inventory analysis, and agile decision-making. Despite all the planning, the main challenges encountered were external factors, such as the lack of available products and excessive prices[45].

When assigning containment actions to reduce transmission, managers must consider experiences from previous epidemics, as they inform future practices. When evaluating the evidence in their study, the authors emphasized that understanding the characteristics of the virus (information on how it transmits and its dynamics within the host's body) was crucial during this pandemic to develop containment measures and strategies to combat COVID-19. Effective and fundamental measures for both prevention and spread of the virus have been adopted worldwide, such as the use of masks, hand and surface hygiene, quarantine, social isolation in confirmed and unconfirmed cases, social distancing, and, in some cases, total lockdown[46].

The penultimate responsibility concerns the coordination of the healthcare network. The managers' work is based on organizing suspected or infected patients at different levels of the care network. However, we know that care was provided by secondary and tertiary care, centered on hospital services. Primary care, for example, had to adapt to participating in care during this period. It is worth noting that, despite limited visibility, the healthcare network was coordinated, and primary care was responsible for health surveillance in the territories, care for users with COVID-19, social support for vulnerable groups, and the continuity of primary care actions[47].

Regarding the assignment of managing corpses, managers were guided by the Ministry of Health on how they should proceed with the bodies in their municipalities, but despite all the guidance, the states had autonomy to manage deaths[48].

Study[49] brought to light a discussion practiced during the dictatorship and now reproduced during the COVID-19 pandemic. Bodies disappeared, the cause of death was concealed, and the bodies were characterized solely as numbers. This exposes the real situation of social vulnerability and invisibility of social groups, as well as the curtailment of human rights. The authors highlighted the state of Maranhão, which, with its impoverished population, was victimized in its moments of grief and mourning. Faced with loss, the population had to deal with the social damage caused by the pandemic, such as unemployment, financial hardship, an overload of domestic work, and the emergence of emotional problems such as anxiety, fear, and depression.

As an example of a positive approach on the part of the administration, the management of bodies in Maringá, Paraná, highlights that the city government adopted all protocols related to the control and prevention of COVID-19 contamination for funeral services, and even organized psychological shifts at the Municipal Health Department facilities to assist the general public with family members who suffered losses due to COVID-19. The hired psychologists rotated in three shifts between 7:00 a.m. and 1:00 a.m., when the service was provided by phone until May 2020[50].

The final responsibility of the managers is related to mitigating the economic, social, and psychological consequences. The Federal Government implemented some temporary and emergency protective measures, providing financial assistance of R$600.00 to informal employees, self-employed workers, and the unemployed, and extending it to low-income individual microentrepreneurs. There was also an increase in the number of families benefiting from the

Bolsa Família program, an advance on the 13th-month salary for INSS retirees and pensioners, and the payment of the salary bonus. Furthermore, within the social security sphere, the annual re-registration requirement for retirees, pensioners, and civil political amnesty recipients was suspended for 120 days, as well as the requirement for verification visits[51].

For companies, some taxes were reduced or delayed preventing job losses. A payroll financing program was created with loans guaranteed by the Treasury for 85% of the amount and tax deferrals. For healthcare, the budgetary allocations of the Ministry of Health, the Ministry of Defense, and the Ministry of Science, Technology, and Innovation were increased to expand additional actions to combat the virus[51].

As mentioned, public administrators have had and continue to have many responsibilities during the COVID-19 pandemic, ranging from the governance of public assets to the management of corpses. The pandemic context required public administrators to go far beyond their usual administrative capabilities. They also had to develop interpersonal skills and be fluent in a wide range of areas (health, economics, culture, security, among others). Public health administrators need to have a broad perspective to identify bottlenecks, both in patient care and administrative matters. Even during a pandemic, public administrators are responsible for providing their teams with solutions and technologies that ensure compliance with the guiding principles of public administration: legality, impartiality, morality, transparency, and efficiency.

Final Considerations

The literature has shown that the COVID-19 pandemic has generated significant changes, impacting society. As a management tool to support decision-making, during these two years of the COVID-19 pandemic, rules were developed to mitigate the contamination and transmissibility of the virus through biosafety protocols. The protocols included monitored and coordinated measures and involved actions aimed at preventing, minimizing, or eliminating risks inherent to activities. They allowed managers to ensure efficient social distancing, environmental cleaning routines, the proper use of personal protective equipment, the prioritization of remote work, and the return to work, among other measures.

Another important measure implemented by administrators and generated by the pandemic is the National Immunization Program, which includes the digital immunization passport. A passport is an electronic document that certifies the holder's vaccination against infectious diseases. Currently, the passport is a requirement in various sectors and has forced the population to get vaccinated, especially for travel and to attend concerts, theaters, cinemas, and other events. The COVID-19 pandemic has highlighted the importance of public administration in times of crisis and the importance of political coordination across all levels of government to overcome the pandemic and its economic impacts.

It's common knowledge that good management needs to focus on opportunities, not problems. Undoubtedly, the pandemic faced many challenges, requiring effective strategic planning, contingency plans, governance structure (creation of response committees), establishment and clarification of professional ethics, and ensuring accountability to society through transparency and communication of all actions taken by the department/sector. It's crucial to guide public administrators on the importance of applying administrative principles, revitalizing the civil service, and professionalizing managers. Focusing on results through ongoing evaluation, management needs to be user/citizen-oriented; transparency and access to public information are essential.

Furthermore, it is essential to create institutional arrangements that seek to represent society's interests by pursuing equity and reducing social inequalities, without sacrificing productivity, motivation, and professional and personal development. The impacts on public health management were extremely significant: increased demand, scarcity of resources, tackling an unknown disease, managing areas with very distinct characteristics, and ensuring access to healthcare for all Brazilians. The pandemic supported the construction of a new public administration, emphasizing efficiency and, especially, management based on an understanding of the complexity of the environment and the problems to be addressed. This complexity is related to the interdisciplinary and multisectoral approach so demanded by the pandemic.

Discussing the COVID-19 pandemic was essential for expanding my knowledge of management, particularly in the healthcare sector. Furthermore, it allowed me to learn about different ways to manage a crisis and understand the need for expertise in different areas. Furthermore, this study was important in understanding managers' responsibilities regarding transparency, ethics, and social responsibility. For future research, this study provides an overview of how the crisis affected healthcare in various states. It also provided positive examples from some managers, which could be replicated in future crises.

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