

Challenges and impacts of the Covid-19 pandemic in Brazil: Perspectives on coping policies and their consequences on public health



<https://doi.org/10.56238/sevened2023.004-016>

Sergio Dionízio de Oliveira

Master's student of the Stricto Sensu Graduate Program in Public Policy and Local Development – EMESCAM

Roberta Ribeiro Batista Barbosa

Professor of the Stricto Sensu Graduate Program in Public Policies and Local Development - EMESCAM.

Laércio da Silva Paiva

Professor, FMABC University Center, Santo André, SP, Brazil.

Fernando Rocha Oliveira

Professor of the Stricto Sensu Graduate Program in Public Policies and Local Development - EMESCAM.

ABSTRACT

The COVID-19 pandemic brought an overload of health systems, with the search for beds to support the demand of patients hospitalized for COVID-19, the heterogeneity and availability of resources in the public and private spheres, was evidenced throughout the pandemic, demonstrating different organizational policies in different regions of Brazil to face the pandemic. To understand the challenges

and impacts of the COVID-19 pandemic in Brazil, focusing on the coping policies adopted and their consequences on public health, a literature review was conducted. There was a need to understand the panorama of government actions and their effects on reducing the transmission of the virus, on the response capacity of the health system, and on the social impacts. This review is based on the investigation and analysis of the existing scientific production in the literature, providing a comprehensive compilation of information, covering various topics, allowing the identification of relevant knowledge gaps that can serve as a basis for future research. The country's economic policy needed to use financial resources to face the crises of the pandemic in the sectors of science, education, health, technology and social protection. This crisis resulting from the pandemic on a global scale also provided a crisis of the sustainable development goals (SDGs), fostering reflections to restore the progress of the SDGs. It is observed that the COVID-19 pandemic has provided negative impacts on the entire world population, stimulating a gap for the reflection of policies to cope with pandemic outbreaks.

Keywords: COVID-19, Coronavirus, Public policies, Health Policy.

1 INTRODUCTION

The COVID-19 pandemic began in the city of Wuhan, China, at the end of December 2019, and has since spread to several countries, causing thousands of deaths worldwide. Although its origin is related to a zoonotic source, the transmission of the coronavirus occurs mainly through the air, through the inhalation of particles coming from infected people or through direct contact with a person or with contaminated objects and surfaces (Umakanthan *et al.*, 2020).

In Brazil, the first case was confirmed on February 26, 2020, and the pandemic was officially declared on March 11, 2020. On June 19, 2020, the country reached the milestone of 1 million confirmed cases of COVID-19. Due to the growing number of cases, the World Health Organization (WHO) has developed recommendations to be followed, such as social distancing, use of masks, and



hygiene of hands and objects, which has impacted several sectors of society, reducing non-emergency hospitalizations in hospitals (Schapira; Fernandes; Fernandes, 2023).

Simultaneously with the increase in cases, the pandemic has brought an overload on health systems, such as the search for intensive care unit (ICU) beds, to support the demand of hospitalized patients. This overload evidenced the heterogeneity and availability of resources in the public and private spheres, demonstrating different organizational policies in different regions of Brazil to face the COVID19 pandemic. (Fields *et al.*, 2022).

Some Brazilian localities in situations of social vulnerability suffered greater impacts on basic sanitation and health conditions during the COVID-19 pandemic, demonstrating the inefficiency of the system accentuated in periods of emergency, thus denoting the lack of preparation of public policies to combat this type of situation, making it necessary to assess the conditions of fragility of the Brazilian population, in search of solutions for future pandemic conditions (Silva *et al.*, 2023).

As a result of a pandemic scenario in the national territory, the impacts on socioeconomic inequalities and public health crises contributed to the worsening of living conditions, placing the states as responsible for containing or minimizing the disasters that the pandemic may cause (Paula; Pear tree; Giordani, 2022).

In addition, the pandemic brought as an immediate consequence the urgent need to control and prevent the disease, initially with limited knowledge about the etiology, resulting in the lack of preparation of health professionals to act in the face of COVID-19, from which it was necessary to develop strategies for care activities to deal with this new challenge, thus making a qualified workforce essential (Vieira *et al.*, 2022).

The importance of understanding the policies to confront COVID-19 in Brazil made it possible to reduce or interrupt the chain of transmission of the disease between individuals who may be infected and those who are healthy, already based on previous data from successful experiences of other epidemics, in addition, the reduction of the aggravations of adverse situations, on the social and economic impacts on society could face (Martins; Guimarães, 2022).

Thus, the present study aims to carry out a narrative review to describe the challenges and impacts of the COVID-19 pandemic in Brazil, focusing on the coping policies adopted and their consequences on public health. We sought to understand the panorama of government actions and their effects on reducing the transmission of the virus, on the response capacity of the health system and on the social impacts.

2 METHODS

This is a narrative review of the literature, which adopts a broad approach, with the objective of understanding the development of the challenges and impacts of the COVID-19 pandemic in Brazil:



perspectives on coping policies and their consequences on public health in a theoretical or contextual way. This review is based on the investigation and analysis of the existing scientific production in the literature, providing a comprehensive compilation of information, covering various topics, allowing the identification of relevant knowledge gaps that can serve as bases for future research.

Through this review, it is possible to gather a collection of current materials, which explore the theme and seek public policy strategies to confront COVID-19. Thus, this research used the *Scientific Electronic Library Online* (Scielo), Latin American and Caribbean Health Sciences Literature (Lilacs) and the *National Library of Medicine* (PubMed) as databases. In addition, consultations were carried out on the websites of the World Organization and the Ministry of Health to verify regulations and legislation throughout the period. The keywords used were: COVID-19; Coronavirus; SARS-CoV-2; public policies; Unified Health System (SUS); In order to cope with COVID-19 and Brazil, the Boolean operator "AND" was used for the search.

The inclusion criteria of the materials addressed were articles and research sources pertinent to the proposed theme and with a technical-scientific approach correlated with the policies to combat COVID-19 in Brazil. Content and articles that were not freely available in full were excluded.

3 RESULTS/DISCUSSION

This discussion will address the COVID-19 pandemic, an unprecedented event that surprised the world from December 2019 onwards. The rapid spread of the SARS-CoV-2 virus, its identification, containment actions, prevention measures, and its impacts on the social, political, and economic spheres are crucial issues for understanding the complexity of this global crisis. This descriptive analysis will cover everything from the early stages of the pandemic to its current implications, highlighting ethical challenges, public health strategies, and the road to recovery.

3.1 ORIGIN AND FIRST CASES: THE BEGINNING OF THE EPIDEMIC AND ITS SPREAD

The COVID-19 pandemic presented itself as an outbreak on a global scale, affecting almost all countries and territories (Pokhrel, 2020). Its identification occurred in Wuhan, China, Hubei province on December 31, 2019, through cases of pneumonia with unknown etiology, in which the government of China reported to the World Health Organization (WHO). However, there are hypotheses of the appearance of this virus before this date, where researchers in France identified SARS-CoV2 in a sample from a patient with pneumonia on December 27, 2019 (Silva Martin *et al.*, 2020).

On January 3, 2020, the government of China reported to WHO the identification of 44 cases of pneumonia of unknown etiology in Wuhan. On January 7, the recognition of the new coronavirus or SARS CoV-2 was identified. Between January 11 and 12, China's National Health Commission reported on the possibility of this new disease being associated with exposures in a seafood market



located in the city of Wuhan and on January 13, 2020, it was confirmed by a laboratory, being identified outside China, in Thailand (Da Silva Martin *et al.*, 2020).

In February 2020, the first cases of the disease were identified in Brazil, marking the beginning of a significant challenge for the country's healthcare system. Faced with this scenario, the Brazilian government took swift measures to contain and slow the spread of the virus. Thus, on February 3, 2020, a Public Health Emergency of National Concern (ESPIN) was officially declared, recognizing the seriousness of the situation and mobilizing resources and efforts to face the pandemic (Cavalcante Junior, 2020).

The World Health Organization declared the COVID-19 pandemic on March 11, 2020, where the concern consisted around the lack of action by governments confirmed by the WHO Director-General (Cavalcante Junior, 2020; WHO, 2020a). Alongside the declaration, the WHO presented strategies to prevent the spread of the virus, including measures such as social distancing, the use of masks, frequent hand washing, and the acceleration of vaccine research and development (WHO, 2020a).

These strategies have been widely adopted by several countries around the world, which has triggered a series of global responses, such as the importance of international cooperation, preparedness for public health emergencies, and addressing fundamental issues of health inequality and vulnerability (WHO, 2020b; Ventura, 2020).

In Brazil, the Ministry of Health, through the Health Surveillance Secretariat, has monitored Severe Acute Respiratory Syndrome (SARS) since the Influenza A(H1N1) pandemic in 2009. In response to this situation and in the face of the global COVID-19 emergency caused by the new Coronavirus, the Ministry of Health further expanded its surveillance in 2020, including COVID-19 monitoring (Brasil, 2022).

Continuous monitoring of respiratory diseases, such as COVID-19, has played a crucial role in the effective implementation of control and prevention strategies. This active surveillance has made it possible to identify trends, assess the impact of public health measures, and make informed decisions to protect the population. Such measures reflected the Ministry of Health's commitment to promoting the health of the population by detecting outbreaks of severe respiratory diseases early and responding effectively to these public health challenges (WHO, 2020; Brazil, 2022).

3.2 COVID19: CLINICAL AND IMMUNOLOGICAL IMPLICATIONS

COVID-19 is a virus that, installed in the human body, is associated with a potent induction of antiviral response, initially inherently with less immunopathological repercussions. When the coronavirus presents itself aggressively, it promotes an increase in pro-inflammatory responses, infiltration of immune cells, including the recruitment of defense cells, such as inflammatory



monocytes, neutrophils and activated T cells to the lungs, leading to injury to the structure. After the resolution of the acute picture of the coronavirus, a post-COVID-19 process occurs, in which, if not resolved, it can cause the permanence of inflammation of cells such as neutrophils, macrophages and monocytes, which can cause tissue damage (Mehandru; Merad, 2022).

The way the coronavirus is transmitted can occur through direct contact with the respiratory droplets of an infected person, or through contact with contaminated objects and surfaces. The manifestation of the symptoms of the disease can vary, and asymptomatic cases are related to an incubation period, lasting an average of 5 to 6 days, and extending up to 14 days, the latter being considered rarer according to the literature. As for symptomatic symptoms, symptoms can appear up to 2 days after exposure and transmission of the virus occurs up to 3 days after the onset of symptoms (Malik 2020; Souza, 2021).

The symptoms of the disease are perceived differently in clinical evaluation, such as fatigue, headaches, dyspnea, cognitive impairment, alteration of the senses, intolerance in the standing posture, decreased tolerance to exercise, palpitations, tachycardia in the standing posture, malaise, sleep alteration, neuropathic pain, gastrointestinal dysfunctions, and renal alterations (Larsen *et al.*, 2021).

The persistence of these symptoms may be associated with the severity of inflammatory reactions and the possibility of new infectious reactions, leading to a delay in the healing process, thus resulting in difficulty in resolving the pathology, thus fostering the persistence of symptoms in the respiratory system. In extreme conditions of persistence of the inflammatory process, damage to the lung tissue may become irreversible, with severe involvement of the respiratory part (Mehandru; Merad, 2022).

The precautionary measures to prevent the contagion of the coronavirus, based on data from the WHO coronavirus platform, instruct the population on: Frequent hand washing with soap and water or sanitizing with 70% hydroalcoholic alcohol gel, eliminating germs that may be present and/or viruses. As for coughing or sneezing, cover your nose and mouth with a handkerchief and/or your arm and not your hands, and when using a handkerchief, dispose of it in a trash can with a lid, after washing your hands (WHO, 2022).

According to WHO guidelines, people infected with the coronavirus (COVID-19) should avoid physical contact with others and stay at home for 10 days from the onset of symptoms and for another 3 days after the symptoms disappear, contact a health professional, or request help from the health telephone service. If you need to leave the house, wear a mask for protection. It is also recommended to avoid touching the eyes, nose and mouth, with unwashed hands and when touching, wash hands, do not share personal objects such as cutlery, plates, glasses and towels, avoid crowds in closed, congested places and close contact, keep environments ventilated to improve the flow of natural ventilation (WHO, 2022).



In Brazil, the National Health Council, through Recommendation No. 067 of 2020, emphasizes the importance of vaccination among the necessary measures for prevention, attributing to regional organizations the responsibility for the implementation of vaccines, including the transportation and care of the entire population (Brasil, 2020).

3.3 CONTAINMENT MEASURES DURING THE PANDEMIC: IMPACT OF GOVERNMENT DECISIONS

Authorities from different regions of the world met to make ethical decisions regarding public health containment measures during the pandemic. In this context, the applicability of the principles of value and science was considered in decision-making. Elements such as non-discrimination, equity, severity, freedom, privacy, proportionality, public protection from harm, solidarity, reciprocity, and public trust were points to be considered (Aliyu, 2021).

In line with the ethical and scientific principles restrictive measures were adopted in Brazil in 2021, the National Council of Health Secretaries (CONASS) implemented a comprehensive set of actions aimed at containing the spread of the disease. This included reducing overcrowding on public transport, promoting remote work in the public and private spheres, expanding testing and monitoring cases, as well as banning face-to-face events and gatherings. In addition, drastic measures were taken, such as the closure of beaches and bars, the implementation of a national curfew, and sanitary barriers, both nationally and internationally (Brasil, 2021). These measures reflected the need to take comprehensive and coordinated actions to address the challenges posed by the pandemic.

Thus, at the beginning of the COVID-19 pandemic, states and municipalities adopted a more proactive stance, supported by the decision of the Federal Supreme Court (STF) in March 2020, which ensured the ability of federal entities to exercise their functions and implement restrictive measures. However, as time progressed, a loosening of these measures was observed, leading the STF to reinforce the importance of maintaining restrictions that were falling into disuse, being neglected during the emergency period (Carvalho *et al.*, 2022).

The development of norms in order to assist coping policies was based on Ordinance No. 356/2020, which mentions the restriction of agglomerations of people, public transport and state governments without federal law. The technical note of 04/2020 deals with personal protective equipment (PPE) for health professionals. No. 544 of 06/16/2020, mentions the replacement of face-to-face classes with classes in digital media and its complementary rule, being the official communication about the Coronavirus. Norm No. 652 until 09/24/2020, established epidemiological surveillance in national and international travel. Ordinance No. 630 of 12/17/2020 explains the restriction of international travel (Prado *et al.*, 2023).



Complementing the measures implemented, the stance adopted by political and community leaders directly influenced the social adherence to the restriction measures, which played a crucial role in managing the spread of COVID-19 and had a direct impact on social norms, cultural practices and local traditions, playing a key role in promoting behaviors aimed at preserving public health. The World Health Organization has contributed to this approach by providing training to leaders and spokespersons, with the aim of establishing effective and multidirectional communication (Santos *et al.*, 2021).

3.4 GLOBAL HEALTH CHALLENGES: TREATIES, TECHNOLOGY, AND SUSTAINABILITY

On May 24, 2021, the World Health Assembly, in a decision-making event on global health, opened a new pandemic treaty established by the European Union and its 27 member states, with the purpose of strengthening preparedness and responses to health emergencies, due to the deficiencies of the international system in addressing issues pertinent to the pandemic. This treaty brings with it the responsibilities of the members of the states in the entire government of our society (Blom *et al.*, 2021).

Global strategies to cope with the coronavirus also include integration with the ecosystem and technology, which permeates information systems. Brazil used a fundamental instrument of this policy, adhering to systems such as e-SUS Notifica, SIVEP-Gripe, SUS Card and CNES as monitoring of the pandemic. Through intersectoral mobilization, risk communication and community participation, case control and prevention, suppression of transmission and reduction of mortality, based on the provision of timely and quality health services (Valentim *et al.*, 2021).

In line with the guidelines of the World Health Organization, the elements of the ecosystem involved: community communication and participation, education, comprehensive surveillance, monitoring, comprehensive health care, contact tracing and management, maintenance of essential services, planning, regulation, and management and coordination (Valentim *et al.*, 2021).

In the context of government action, Law No. 13,979 of February 6, 2020, stimulated the measures to be adopted for health care during the period of the COVID-19 pandemic at the collective level, directing an approximation in parliament of the actions developed by the executive branch, and thus reduce or contain a possible spread of COVID-19 in the national territory (Penaforte, 2022).

Thus, in the face of several government measures adopted to reduce the impacts of the pandemic, there was a process of intense attack on the constitutional principle of universality, of the Unified Health System (SUS), with the aim of maintaining neoliberal policies, promoting interests that aimed to stimulate the continuity of sectoral activities, with the purpose of safeguarding the stability of the national financial system (Mendes *et al.*, 2023).

The country's economic policy needed to use financial resources to face the crises of the pandemic, in the sectors of science, education, health, technology and social protection. This crisis,



resulting from the COVID-19 pandemic, on a global scale, also provided a crisis of the sustainable development goals (SDGs), fostering reflections for the restoration of progress on the SDGs. (Lima, 2022).

According to Marques and Ferreira, (2023), there was an increase in public spending during the pandemic, to face the health crisis and alleviate the consequences of the paralysis of activities in employment and income. Data from the International Monetary Fund in 2021 reported that about 7.8 trillion in 2020 were disposed of globally and that 1.0 trillion was allocated to face the consequences of the pandemic on health, where the 6.8 trillion were willing to face the other socioeconomic impacts of this ill.

Despite the public resources employed during the pandemic period, in Brazil from the beginning of the pandemic until the first half of 2023, 37,601,257 cases of people infected by the virus were registered, with an incidence of 17,892.8 per 100 thousand inhabitants, of which 36,850,916 patients recovered and 702,907 died, according to the record of the coronavirus panel Brazil (Coronavirus Brazil, 2023).

Thus, despite the considerable investments in health in Brazil during the pandemic, the worrying numbers of cases and deaths reveal the complexity of the challenges faced. Although a considerable portion of the resources have been directed to health, socioeconomic impacts persist as a central concern. In times of crisis, the allocation of public resources must be carefully planned and monitored to efficiently meet the needs of the population.

4 CONCLUSION

The COVID-19 pandemic has caused serious impacts around the world. In this scenario, the need for effective policies to combat global health emergencies has become undeniable. Authorities have played a key role in addressing these problems, and while government interventions have proven effective in many cases, at critical moments, such as a pandemic, these policies could have been optimized to achieve even higher levels of efficiency, potentially saving significantly more lives. Therefore, during global challenges such as pandemics and global health issues, the need for effective preparedness policies, accompanied by excellent research and sensitive to local contexts, is essential to ensure the safety, health and well-being of populations around the world.



REFERENCES

- ALIYU, Alhaji A. Public health ethics and the COVID-19 pandemic. *Annals of African medicine*, v. 20, n. 3, p. 157, 2021. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8477289/>. Acesso em: 16. Mai. 2023
- BLOM, Iris Martine et al. Youth versus pandemics: the role of future generations in the pandemic treaty. *The Lancet Global Health*, v. 9, n. 10, p. e1361-e1362, 2021. Disponível em: <https://www.thelancet.com/action/showPdf?pii=S2214-109X%2821%2900307-7>. Acesso em: 20. Mai. 2023
- BRASIL., Conselho nacional de saúde. Distrito Federal, c2020. Disponível em: <https://conselho.saude.gov.br/recomendacoes-cns/recomendacoes-2020/1557-recomendacao-n-073-de-22-de-dezembro-de-2020>. Acesso em: 25. Ago. 2023
- BRASIL., Conselho nacional de saúde. Distrito Federal, c2021. Disponível em: <https://conselho.saude.gov.br/ultimas-noticias-cns/1627-conselho-de-secretarios-de-saude-orienta-medidas-restritivas-nos-estados-diante-do-pior-momento-da-pandemia>. Acesso em: 09. Jun. 2023.
- Brasil. Ministério da Saúde. Secretaria de Vigilância em Saúde. Guia de Vigilância Epidemiológica. Emergência de Saúde Pública de Importância Nacional pela Doença pelo Coronavírus 2019. Vigilância Integrada de Síndromes Respiratórias Agudas. Doença pelo coronavírus 2019, influenza e outros vírus respiratórios. Brasil: Ministério da Saúde ; 2020. Disponível em: <https://www.gov.br/saude/pt-br/coronavirus/publicacoes-tecnicas/guias-e-planos/guia-de-vigilancia-epidemiologica-covid-19/view>. Acesso em: 15. Set. 2023.
- CAMPOS, Pedro Paulo Zanella do Amaral et al. Estudo nacional sobre recursos da saúde e práticas clínicas durante o início da pandemia da COVID-19 no Brasil. *Revista Brasileira de Terapia Intensiva*, v. 34, p. 107-115, 2022. Disponível em: <https://www.scielo.br/j/rbti/a/CwVH4xBFNvRm7BWJfQBfp9y/?format=pdf&lang=pt>. Acesso em: 25. Mai. 2023.
- CARVALHO, André Luís Bonifácio de et al. Os governos estaduais no enfrentamento da Covid-19: um novo protagonismo no federalismo brasileiro? *Saúde em Debate*, v. 46, p. 62-77, 2022. Disponível em: <https://www.scielo.br/j/sdeb/a/dXLbmGC4sJnJNpFV6XyHJ4n/?format=pdf&lang=pt>. Acesso em: 04. Jun. 2023.
- Cavalcante JR, Cardoso-dos-Santos AC, Bremm JM, Lobo A de P, Macário EM, Oliveira WK de, et al.. COVID-19 no Brasil: evolução da epidemia até a semana epidemiológica 20 de 2020. *Epidemiol Serv Saúde* [Internet]. 2020;29(4):e2020376. Available from: <https://www.scielo.br/j/ress/a/zNVktw4hcW4kpQPM5RrsqXz/?format=pdf&lang=pt>. Acesso em: 10. Set. 2023.
- Brasil. Ministério da Saúde. Coronavírus Brasil. c2023. Disponível em: <https://covid.saude.gov.br/>. Data de acesso: 02. Jun. 2023.
- DA SILVA MARTIN, Pollyanna et al. História e Epidemiologia da COVID-19. *ULAKES Journal of Medicine*, v. 1, 2020. Disponível em: <https://revistas.unilago.edu.br/index.php/ulakes/article/view/253/232>. Acesso em: 29. Jun. 2023.
- Brasil. Ministério da saúde. DATASUS (Departamento de informática do sus). Disponível em: DATASUS. Federal District, c2022. Available at: <https://opendatasus.saude.gov.br/dataset/srag-2021-a-2023>. Access date: 14. Jun. 2023.



LARSEN, Nicholas W.; STILES, Lauren E.; MIGLIS, Mitchell G. Preparing for the long-haul: Autonomic complications of COVID-19. *Autonomic Neuroscience*, v. 235, p. 102841, 2021. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8254396/pdf/main.pdf>. Acesso em: 10. Jun. 2023.

LIMA, Nísia Trindade. Pandemia e interdisciplinaridade: desafios para a saúde coletiva. *Saúde em Debate*, v. 46, p. 9-24, 2022. Disponível em: <https://www.scielo.br/j/sdeb/a/hDBs7ftnVrRKDPzLpNqvFdz/?format=pdf&lang=pt>. Accessed on: 19. Jun. 2023.

MALIK, Yasmin A. Properties of coronavirus and SARS-CoV-2. *The Malaysian journal of pathology*, v. 42, n. 1, p. 3-11, 2020. Disponível em: <http://www.mjpath.org.my/2020/v42n1/properties-of-coronavirus.pdf>. Acesso em: 27. Jun. 2023.

SOUSA NETO, Antonio Rosa de et al. Symptomatic manifestations of the disease caused by coronavirus (COVID-19) in adults: systematic review. *Revista Gaúcha de Enfermagem*, v. 42, 2021. Disponível em: <https://www.scielo.br/j/rngen/a/QRMyhJYvr8p9Yw7HDqsz5Xs/?format=pdf&lang=pt>. Acesso em: 09. Jun. 2023.

MARQUES, ROSA; FERREIRA, Mariana Ribeiro Jansen. O financiamento do SUS no enfrentamento da pandemia de Covid-19. *Brazilian Journal of Political Economy*, v. 43, p. 465-479, 2023. Disponível em: <https://www.scielo.br/j/rep/a/9cxF8wsr3PHBdxWyyJyc37D/?format=pdf&lang=pt>. Acesso em: 10. Jun. 2023.

MARTINS, Thalyta Cassia de Freitas; GUIMARÃES, Raphael Mendonça. Distanciamento social durante a pandemia da Covid-19 e a crise do Estado federativo: um ensaio do contexto brasileiro. *Saúde em Debate*, v. 46, p. 265-280, 2022. Disponível em: <https://www.scielo.br/j/sdeb/a/S3rJZQD9vtjBZyzmLMJ4bQr/?format=pdf&lang=pt>. Accessed on: 02. Jun. 2023.

MEHANDRU, Saurabh; MERAD, Miriam. Pathological sequelae of long-haul COVID. *Nature immunology*, v. 23, n. 2, p. 194-202, 2022. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9127978/pdf/nihms-1804958.pdf>. Acesso em: 13. Jun. 2023.

MENDES, Áquilas; CARNUT, Leonardo; MELO, Mariana. Continuum de desmontes da saúde pública na crise do covid-19: o neofascismo de Bolsonaro. *Saúde e Sociedade*, v. 32, 2023. Disponível em: <https://www.scielo.br/j/sausoc/a/4nFqGgLQ5wL5wHGjtJfntNS/?format=pdf&lang=pt>. Acesso em: 13. Jun. 2023.

Organização Mundial da Saúde (OMS). Genebra Suíça, c2022. Disponível em: <https://www.who.int/es/emergencies/diseases/novel-coronavirus-2019/advice-for-public>. Acesso em: 25. Ago. 2023.

PAULA, Nilson Maciel de; PEREIRA, Wellington; GIORDANI, Rubia Carla Formighieri. A COVID-19 em meio a uma “tempestade perfeita” no capitalismo neoliberal: reflexões críticas sobre seus impactos no Brasil. *Ciência & Saúde Coletiva*, v. 28, p. 761-770, 2023. Disponível em: <https://www.scielo.br/j/csc/a/6z38cTF6QZ5fFXckNYtcs4D/?format=pdf&lang=pt>. Acesso em: 04. Jun. 2023.



PENAFORTE, Thais. As epistemes políticas da Covid-19: construções e referentes. *Saúde em Debate*, v. 46, p. 49-61, 2023. Disponível em: <https://www.scielo.br/j/sdeb/a/NsLBWskr4XhgSSBNR79ZVrr/?format=pdf&lang=pt>. Accessed on: 04. Jun. 2023.

POKHREL, Sumitra; CHHETRI, Roshan. A literature review on impact of COVID-19 pandemic on teaching and learning. *Higher education for the future*, v. 8, n. 1, p. 133-141, 2021. Disponível em: <https://journals.sagepub.com/doi/pdf/10.1177/2347631120983481>. Accessed on: 06. Jun. 2023.

PRADO, Nilia Maria de Brito Lima et al. Respostas governamentais heterogêneas no enfrentamento da pandemia da COVID-19 por países da América Latina. *Ciência & Saúde Coletiva*, v. 28, p. 665-683, 2023. Disponível em: <https://www.scielo.br/j/csc/a/pJ5mqvWjcC8Yw5dMmy9QnbT/?format=pdf&lang=pt>. Acesso em: 06. Jun. 2023.

SANTOS, Hebert Luan Pereira Campos dos et al. A voz da comunidade no enfrentamento da Covid-19: proposições para redução das iniquidades em saúde. *Saúde em Debate*, v. 45, p. 763-777, 2021. Disponível em: <https://www.scielo.br/j/sdeb/a/YdpFBc4PPmdwTQ5Xb3syhgF/?format=pdf&lang=pt>. Acesso em: 04. Jun. 2023.

SCHAPIRA, Evandro; FERNANDES, Rodrigo Antonio Brant; FERNANDES, Arthur Gustavo. Consultas de emergência oftalmológicas durante a fase inicial da pandemia da doença por coronavírus em um hospital de referência em São Paulo, Brasil. *Arquivos Brasileiros de Oftalmologia*, v. 86, p. 206-209, 2022. Disponível em: <https://www.scielo.br/j/abo/a/6PTjhR3VNsxMZQ3vD3PfkPM/?format=pdf&lang=en>. Acesso em: 15. Jun. 2023.

SILVA, Felipe da Costa da et al. Correlação entre saneamento básico e vulnerabilidade à pandemia de covid-19 no Brasil. *Engenharia Sanitaria e Ambiental*, v. 28, p. e20220145, 2023. Disponível em: <https://www.scielo.br/j/csc/a/dDpDLMXm8GjGrVGrtPtfp5k/?format=pdf&lang=pt>. Acesso em: 07. Jun. 2023.

SILVA, Renato França da et al. A redução de risco de desastres, a agenda dos Objetivos Sustentáveis e os princípios do SUS, no contexto da pandemia de COVID-19. *Ciência & Saúde Coletiva*, v. 28, p. 1777-1788, 2023. Disponível em: <https://www.scielo.br/j/csc/a/dDpDLMXm8GjGrVGrtPtfp5k/?format=pdf&lang=pt>. Acesso em: 07. Jun. 2023.

UMAKANTHAN, Srikanth et al. Origin, transmission, diagnosis and management of coronavirus disease 2019 (COVID-19). *Postgraduate medical journal*, v. 96, n. 1142, p. 753-758, 2020. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10016932/pdf/postgradmedj-96-753.pdf>. Acesso em: 20. Jun. 2023.

BRASIL. Ministério da saúde. UNASUS. Distrito Federal, c2020. Disponível em: <https://www.unasus.gov.br/noticia/organizacao-mundial-de-saude-declara-pandemia-de-coronavirus>. Data de acesso: 09. Jun. 2023.

BRASIL. Ministério da saúde. UNASUS. Distrito Federal, c2023. Disponível em: <https://www.unasus.gov.br/especial/covid19/>. Data de acesso: 07. Jun. 2023.

VALENTIM, Ricardo Alexandro de Medeiros et al. A relevância de um ecossistema tecnológico no enfrentamento à Covid-19 no Sistema Único de Saúde: o caso do Rio Grande do Norte, Brasil. *Ciência*



& Saúde Coletiva, v. 26, p. 2035-2052, 2021. Disponível em: <https://www.scielo.br/j/csc/a/FcfxdRKWqKnByMfp9m6h7CK/?format=pdf&lang=pt>. Acesso em: 25. jun. 2023.

VIEIRA, Silvana Lima et al. Ações de educação permanente em saúde em tempos de pandemia: prioridades nos planos estaduais e nacional de contingência. *Ciência & Saúde Coletiva*, v. 28, p. 1377-1386, 2023. Disponível em: <https://www.scielo.br/j/csc/a/X3Dc5hLPNhCzWGjBCJdJLcd/?format=pdf&lang=pt>. Acesso em: 28. jun. 2023.

Ventura D de FL, Ribeiro H, Giulio GM di, Jaime PC, Nunes J, Bógus CM, et al.. Desafios da pandemia de COVID-19: por uma agenda brasileira de pesquisa em saúde global e sustentabilidade. *Cad Saúde Pública* [Internet]. 2020;36(4):e00040620. Available from: <https://www.scielo.br/j/csp/a/sWTDsf6c6nhPcxwq3pwCpcS/?format=pdf&lang=pt>. Accessed on: 15. Aug. 2023.

World Health Organization. Director-General's statement on IHR Emergency Committee on Novel Coronavirus (2019-nCoV), Genebra, 2020a. Available from: [https://www.who.int/director-general/speeches/detail/who-director-general-s-statement-on-ihf-emergency-committee-on-novel-coronavirus-\(2019-ncov\)](https://www.who.int/director-general/speeches/detail/who-director-general-s-statement-on-ihf-emergency-committee-on-novel-coronavirus-(2019-ncov)). Acesso em: 13. set. 2023.

World Health Organization - WHO. WHO Director-General's opening remarks at the media briefing on COVID-19 [Internet]. Geneva: World Health Organization; 2020b. Available from: <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>. Acesso em: 10. agos. 2023.