www.rbmfc.org.br
ISSN 2197-7994

Research Article

# Primary Health Care in the COVID-19 pandemic: an analysis of response plans to the health crisis in Brazil

## A Atenção Primária à Saúde na pandemia da COVID-19: uma análise dos planos de resposta à crise sanitária no Brasil

## *Atención Primaria a la Salud en la pandemia de COVID-19: un análisis de los planes de respuesta a la crisis sanitaria en Brasil*

Michelle Fernandez[1], Luisa da Matta Machado Fernandes[2], Adriano Massuda[3]

[1]Universidade de Brasília – Brasília, (DF), Brazil.
[2]Instituto Rene Rachou, Fiocruz Minas – Belo Horizonte (MG), Brazil.
[3]Fundação Getulio Vargas – São Paulo (SP), Brazil.

## Abstract

**Introduction:** The pandemic caused by COVID-19 has unevenly affected the world. Countries with lack of national coordination and/or which resisted implementing non-pharmacological public health actions had their populations impacted by the high number of cases, deaths from COVID-19, and suffered significant socioeconomic impacts. In the case of Brazil, special attention should be given to the role played by Primary Health Care in the prevention and control of COVID-19, considering its function as coordinator and organizer of the Brazilian Unified Health System. **Objective:** We aim to discuss the actions of Primary Health Care during the first year of the health emergency in Brazil. **Methods:** To do so, plans proposed by several organizations were considered: World Health Organization, National Council of State Health Secretaries and National Council of Local Health Secretaries, Brazilian Association of Collective Health, and the Brazilian Society of Family and Community Medicine. The plans were compared with the set of documents related to Primary Health Care published by the Brazilian Ministry of Health. **Results:** The strategy to combat the pandemic in Brazil, from the perspective of the Brazilian Ministry of Health coordination, failed in underestimating the role of Primary Health Care. Despite the appeal and parameters established by national and international entities, the action was uncoordinated, and little of what was recommended in technical notes was implemented. **Conclusions:** Considering that the pandemic is still ongoing in Brazil, the centrality of Primary Health Care must be resumed.

**Keywords:** Pandemics; Coronavirus infections; COVID-19; Primary health care; Healthcare models; Public health policy.

**Corresponding author:**
Luisa da Matta Machado Fernandes
E-mail: luisa@mattamachado.org

**Funding:**
No external funding.
**Ethical approval:**
not applicable.
**Provenance:**
Not commissioned.
**Peer review:**
external.
Received: 01/09/2022
Approved: 06/27/2022
**Associate Editor:**
Monique Bourget

**How to cite:** Fernandez M, Fernandes LMM, Massuda A. Primary Health Care in the COVID-19 pandemic: an analysis of response plans to the health crisis in Brazil. Rev Bras Med Fam Comunidade. 2022;17(44):3336. https://doi.org/10.5712/rbmfc17(44)3336

## Resumo

**Introdução:** A pandemia da COVID-19 afetou o mundo desigualmente. Países com ausência de coordenação nacional e/ou que resistiram a implementar as ações não farmacológicas de saúde pública tiveram suas populações impactadas pelo alto número de casos e pelas mortes por COVID-19, além de grandes impactos socioeconômicos, como o Brasil e os EUA. No caso brasileiro, especial atenção deve ser dada ao papel da Atenção Primária à Saúde (APS), considerando sua função de coordenadora e ordenadora do Sistema Único de Saúde. **Objetivo:** Este artigo tem como objetivo discutir as ações da APS no primeiro ano da emergência sanitária no Brasil. **Métodos:** Para realizar a análise proposta, consideramos os planos propostos por diversas organizações: Organização Mundial da Saúde, Conselho Nacional de Secretários de Saúde e Conselho Nacional de Secretarias Municipais de Saúde, Associação Brasileira de Saúde Coletiva e Sociedade Brasileira de Medicina de Família e Comunidade. Os documentos foram contrapostos ao conjunto de documentos publicados pelo Ministério da Saúde relacionados à APS. **Resultados:** A estratégia de combate à pandemia do Brasil falhou em subestimar o papel da APS. Mesmo diante do apelo e dos parâmetros estabelecidos por entidades nacionais e internacionais, a ação foi descoordenada e pouco do previsto em notas técnicas foi implementado. **Conclusões:** Entendendo que a pandemia ainda está em curso no Brasil, há a necessidade de retomar a centralidade da APS.

**Palavras-chave:** Pandemias; Infecções por coronavírus; COVID-19; Atenção primária à saúde; Modelos de assistência à saúde; Políticas públicas de saúde.

## Resumen

**Introducción:** La pandemia de COVID-19 ha afectado al mundo de manera desigual. Los países con falta de coordinación nacional y/o que se resistieron a implementar acciones de salud pública no farmacológicas vieron su población impactada por el alto número de casos, muertes por COVID-19, así como por importantes impactos socioeconómicos, como Brasil y Estados Unidos. En el caso brasileño, se debe poner especial atención al rol de la APS, considerando su función de coordinador y ordenante del SUS. **Objetivo:** Este artículo discute cuáles son las acciones de la APS durante el primer año de la emergencia de salud en Brasil. **Métodos:** Para eso, consideramos los planes propuestos por varias organizaciones: OMS, Consejo Nacional de Secretarios de Salud y Consejo Nacional de Secretarios Municipales de Salud, Asociación Brasileña de Salud Colectiva y Sociedad Brasileña de Medicina de Familia y Comunidad. Los documentos se contrastaron con el conjunto de documentos publicados por el Ministerio de Salud relacionados con la APS. Se concluye que la estrategia brasileña de lucha contra la pandemia subestimó el papel de la APS. **Resultados:** A pesar del llamamiento y parámetros establecidos por entidades nacionales e internacionales, la acción fue descoordinada y poco de lo previsto en notas técnicas se implementó. **Conclusiones:** Entendiendo que la pandemia todavía está en curso en Brasil, es necesario retomar la centralidad de la APS.

**Palabras clave:** Pandemias; Infecciones por coronavirus; COVID-19; Atención primaria a la salud; Modelos de atención de salud; Políticas públicas de salud.

# INTRODUCTION

The pandemic caused by the new coronavirus, SARS-Cov-2 (COVID-19), which led to more than six million deaths by March 2022, unevenly affected the world. Countries that were able to coordinate national actions to prevent community transmission of the virus had populations less affected by the disease.[1] Conversely, countries with no national coordination and/or that resisted implementing non-pharmacological public health actions had their populations impacted by a high number of cases and deaths from COVID-19, in addition to major socioeconomic impacts such as Brazil and the United States of America.[2,3]

Thus, over two years after the beginning of the pandemic and still with an increasing number of new cases, it is necessary to identify errors made in coping with this health emergency to improve the capacity to respond to future crises and strengthen health systems. In the case of Brazil, special attention should be paid to the analysis of the role played by Primary Health Care (PHC) in the prevention and control of COVID-19, considering its role as care coordinator and organizer of the gateway to the Brazilian Unified Health System (SUS).

PHC can play a decisive role in tackling health crises. In previous epidemics, such as dengue, Zika and Ebola cases, experiences report the important help of PHC in the prevention, diagnosis, treatment,

and rehabilitation of patients.[4,5] In addition, tracking and treatment of contacts consist in routine activities of PHC for the control of communicable diseases such as tuberculosis and meningitis. The potential of PHC to deal with public health emergencies is related to the attribute of community orientation, which enables to recognize collective health needs in a territory by epidemiological analysis combined with direct contact with the population.[6]

However, the role of PHC was not fully considered regarding its potential in coping with COVID-19. Although community engagement has been demonstrated as crucial to the control of the epidemic at the local level,[7-9] even countries with consolidated PHC have not guided their services to carry out actions to prevent and control the transmission of the virus, restricting guidance for the face-to-face or remote clinical treatment of patients.[10] Brazil, which has extensive PHC coverage achieved through the Family Health Strategy during the first year of the pandemic, had guidance from the Brazilian Ministry of Health limited to clinical protocols for the management of patients with respiratory symptoms.

In this essay, we discuss the possible roles of PHC in the response to COVID-19 and perform a documentary analysis based on the compilation of action plans established in Brazil during the first year of the pandemic, between February 2020 and February 2021. To this end, we consulted the international literature and investigated official documents with recommendations on the performance of PHC in relation to COVID-19 published by the World Health Organization (WHO) and government agencies, such as the Brazilian Ministry of Health (*Ministério da Saúde* – MS), the National Council of State Health Secretaries (*Conselho Nacional de Secretários de Saúde* – CONASS) and the National Council of Local Health Secretaries (*Conselho Nacional de Secretarias Municipais de Saúde* – CONASEMS), in addition to technical notes published by scientific societies such as the Brazilian Association of Collective Health (*Associação Brasileira de Saúde Coletiva* – ABRASCO) and the Brazilian Society of Family and Community Medicine (*Sociedade Brasileira de Medicina de Família e Comunidade* – SBMFC).

## The role of Primary Health Care in the first year of the COVID-19 pandemic in Brazil

In well-structured and organized health systems, PHC is preferably the first place for patients to access health services, which is expected to occur also during epidemics.[11,12] PHC teams, through the bond established with the local community, are strategically positioned to perform the early diagnosis of infected people, treat mild cases, collaborate with epidemiological surveillance actions, and implement prevention and health education measures.[13,14]

In the response to COVID-19, PHC can also play a significant role in response management, differentiating patients with respiratory symptoms from those with COVID-19, identifying contacts of patients diagnosed with COVID-19, promoting access to early diagnosis, helping vulnerable people to deal with their anxiety about the virus and remain in social isolation as well as reducing the demand for hospital services.[1,15] These functions can be improved in an integrated health system, with clear communication and active participation in crisis committees.[14]

The interim guidance of the role of PHC in response to COVID-19, published by the WHO two weeks after the pandemic declaration, provided countries with succinct and clear guidelines for PHC action during the initial health emergency crisis.[15] Five axes of this action were highlighted:

1. Identify and manage potential cases of COVID-19 as soon as possible;
2. Avoid the risk of transmission of infection to contacts and healthcare professionals;
3. Maintain the provision of essential health services;

4. Improve existing health surveillance, including monitoring of severe acute respiratory infections; and
5. Strengthen health communication regarding the risks of the disease, promoting community engagement in the ascribed territory.

In addition to being essential for the effective management of a response to health emergencies, PHC also plays a central role in the continuity of care for the population that needs access to a health service for reasons other than the pandemic.[12,16] Evidently, despite the need to respect the sanitary recommendations of non-agglomeration and guarantee of care for suspected cases of COVID-19, there is a demand for continuity of care not deferred in PHC such as the care of chronic patients and prenatal care, among others.

In the context of the COVID-19 pandemic, PHC also plays a key role in protecting the vulnerable population. It is known that COVID-19 unequally affects the population. International studies quickly identified older adults and people with preexisting chronic conditions as the most susceptible individuals to developing the severe form of the disease.[17] Moreover, the territories most affected and most susceptible to the COVID-19 pandemic are those with greater social vulnerability, whether in large cities or in small cities facing the health crisis in Brazil — understanding social vulnerability as a condition of individuals in fragile situations, which exposes them to greater risks.[2,18,19] Thus, the social vulnerability of a portion of the population indicates a position of fragility in the face of the pandemic.

In this context, the continued care provided by PHC, including the follow-up of vulnerable groups, can reduce hospitalizations resulting from sensitive and chronic conditions. Improving the quality of primary health care can minimize the impact of poverty on vulnerable population groups.[20,21] In this sense, in the current health crisis, PHC facilities, due to their widespread distribution in the territory, can potentially reach populations marginalized by poverty, people with disabilities, chronically ill, older adults, children, and pregnant women.

Thus, after analyzing the international recommendations, specialized literature, and specificities of Brazil, we identified five possible axes of PHC action during the COVID-19 pandemic, presented in Chart 1.

The five axes that compose the proposed action model are described as follows:

1. Acting on the surveillance and prevention of contagion. PHC would be responsible for identifying positive cases, locating their contacts, and providing guidance on isolation to reduce the spread of the disease in the territories;
2. Dissemination of information about prevention and care practices to communities, using language and technologies appropriate to each site;
3. Support to the groups most vulnerable to the crisis, both regarding health conditions and social vulnerability. The proximity of PHC to communities allows quick identification of risk situations;
4. Continued implementation of PHC priority activities such as monitoring of pregnant women, patients with chronic diseases, prevention of arboviruses, among others; and
5. Provision of care and monitoring of mild cases of COVID-19, considering the importance of early recognition of the worsening of the disease and the need not to overburden hospital and emergency services.

## Primary Health Care in Brazil and the response to COVID-19

The response to COVID-19 in Brazil has been very differentiated between regions of the country, depending on the structure and performance of state and municipal governments. Overall, there was

**Chart 1.** Axes of action of Primary Health Care in the COVID-19 pandemic.

| Axes | Actions |
|---|---|
| Health Surveillance | Tracking of suspects and contacts<br>Early diagnosis/testing |
| Management of mild cases | Monitoring of patients with mild symptoms<br>Monitoring of hospital discharges |
| Information on prevention and care | Prevention measures<br>Health education |
| Maintenance of the PHC principles | Continuity of service provision<br>Care coordination<br>Comprehensive care<br>Access |
| Prioritization of vulnerable groups | Pregnant women<br>Older adults<br>Homeless people<br>Indigenous people<br>Quilombola communities<br>People with special needs |

PHC: Primary Health Care.

a strong expansion of hospital beds and a race to purchase respirators. However, little emphasis was given to involving PHC in actions to control the transmission of the virus. Furthermore, we observed that the Federal Government did not assume its role as health authority for the coordination of the national response to the epidemic.[22] This dynamic influenced the role of PHC during the COVID-19 pandemic.

Next, we present the different perspectives of PHC performance in Brazil during the pandemic. The aforementioned axes were used to analyze the scope of the proposals of PHC during the pandemic in documents of international and national entities as well as the set of documents, ordinances, and manuals directed to PHC published by the Brazilian Ministry of Health between February and December 2020. The analyzed documents are described in Chart 2.

The documents published by the MS, which include ordinances, manuals, guidance, and protocols, gather information on symptoms, form of transmission, clinical management, and guidelines for the prevention of contagion by COVID-19. Most documents address the clinical management of COVID-19 in PHC. The majority of publications of the MS begin with the general definition of the disease, symptoms, forms of contagion, and methods of prevention. Given this basic information, each document focus on its specificities, such as those addressing the follow-up of specific groups such as pregnant women, puerperal women, older adults, chronically ill individuals, and others.

It is noteworthy that, in addition to the production of regulations with the capacity to conduct local actions, the coordination of the MS would have been determinant for a more structured action of PHC and, therefore, for a better result in coping with the pandemic by Brazil. Nevertheless, the documents published by the MS focused on protocols for the clinical management of respiratory symptoms, especially the first ones.

Moreover, although the MS announced a mass testing initiative, Brazil is one of the countries with the lowest proportion of per capita testing worldwide and, in all Brazilian states, there are strong indications

**Chart 2.** View of different entities on the performance of Primary Health Care in the COVID-19 pandemic.

| Institution | Name of the document | Date |
|---|---|---|
| Ministry of Health | Guidelines for the management of patients with COVID-19 | No date |
| Ministry of Health | Fast-track for primary health care in locations with fast community transmission | 2020 |
| Ministry of Health | Recommendations for adequacy of the actions of community health agents in the face of the current epidemiological situation. Regarding COVID-19 | 03/2020 |
| Ministry of Health | Articulation of the health care network in the care of COVID-19 cases | 03/2020 |
| National Council of State Health Secretaries | Guidance to coping with the pandemic in the health care network | 05/01/2020 |
| Brazilian Society of Family and Community Medicine | SBMFC recommendations for PHC during the COVID-19 pandemic | 05/16/2020 |
| Ministry of Health | Coronavirus (COVID-19) clinical management protocol in Primary Health Care | 05/2020 |
| Ministry of Health | MS Ordinance No. 1.444 | 05/29/2020 |
| Ministry of Health | Technical note No. 18/2020-DESF/SAPS/MS | 06/18/2020 |
| Front for Life | National Plan to Combat the COVID-19 Pandemic | 07/15/2020 |
| Ministry of Health | Technical note No. 14/2020-COCAM/CGCIVI/DAPES/SAPS/MS | 08/05/2020 |
| Ministry of Health | Manual: how to organize the care of people with chronic diseases in PHC in the context of the pandemic | 11/03/2020 |
| Ministry of Health | Manual of recommendations for the care of pregnant women and puerperal women in the face of the COVID-19 pandemic | 2020 |

SBMFC: Brazilian Society of Family and Community Medicine; PHC: Primary Health Care; MS: Brazilian Ministry of Health.

of underreporting of COVID-19, with an exponential increase in Severe or Acute Respiratory Syndrome.[23] The documentary analysis demonstrates that the MS established a strict test protocol only for symptomatic cases and directed states and municipalities to classify all suspected cases of COVID-19 as nonspecific flu-like syndrome. Thus, instead of providing conditions for PHC to coordinate the tests in the territory and establish the active search for suspects of COVID-19, it began to limit the action of workers and induce flows that led to the concentration of testing at the hospital level.

In view of the aforementioned scenario, marked by the lack of coordination of the MS in several aspects and the slowness in providing national guidelines that could be efficiently implemented, considering the different moments of the pandemic in the country, other national entities, important in the debate on public health policies, publicly defended the need to strengthen PHC and strategically position it in the fight against the pandemic.

The virtual seminar of ABRASCO in April 2020 was emphatic about the need to consider PHC as a strategic actor for coping with the pandemic.[24] SBMFC highlighted recommendations for continuity of care. The recommendations of May 2020 reinforce the role of community health agents in addressing and protecting women and children at risk of domestic violence. Another key concern was to consider the care for women in the pregnancy-puerperal cycle as an essential service to be maintained during the pandemic, highlighting the role of PHC in identifying the most vulnerable groups, consequently more exposed to illnesses and violence.

Still in May 2020, CONASEMS and CONASS published a joint guidance reinforcing the organization in Health Care Networks and the importance of all strategies tackling the pandemic being tripartite.

The document points to the role of PHC in coordinating care in all Health Care Networks, its responsibility for monitoring the population ascribed to the territory, the need to expand service hours for cases of flu-like syndrome, the guarantee of permanent education spaces for teams, and the guarantee of care to users with chronic conditions and other acute conditions (e.g., dengue). In pandemic-oriented actions, the document recommends that teams organize the flows in the units for the classification and risk stratification among patients with flu-like symptoms and to perform telephone monitoring of mild cases every 48 hours.

In July 2020, the National Health Council (CNS) of the Brazilian Ministry of Health, with nine other entities in the field of collective health, launched the National Plan to Combat the COVID-19 Pandemic in a coalition called Front for Life. The document, which in December 2020 had its third version released, is consistent in pointing out that 80% of COVID-19 cases are of low severity, hence, they can be managed by PHC. It highlights that it is not a moment to refrain the provision of healthcare services, but rather to expand and strengthen care networks, which have PHC as an organizer, exercising not only the role of direct care, but also of promotion and prevention actions that are at the heart of non-pharmacological health measures to tackle COVID-19. Thus, the document underlines that the effective coping of the pandemic involves expanding access to the Family Health Strategy, including oral health and Extended Family Health Centers (*Núcleos Ampliados de Saúde da Família* – NASF), based on the attributes of first-contact care, continuity of care, integrality, coordination, cultural competence, and family and community orientation. Four axes of action of PHC teams during the pandemic are pointed out as actions integrated in the territory:

1. Health surveillance in the territories;
2. Individual care of confirmed and suspected cases of COVID-19;
3. Community action with support for vulnerable groups in the territory;
4. Continuity of PHC routine provision of health care.

Table 1 summarizes the axes of PHC performance found in each of the documents of the analyzed organizations, which were previously recapitulated. The CONASS and CONASEMS guidelines do not address the aspects of health surveillance and integration with other PHC services. The Front for Life discusses the maintenance of community actions for vulnerable groups, but does not specifically address each of these groups and its peculiarities. SBMFC presented the leanest document, proposing to respond to the main questions of physicians in PHC. Thus, the document does not address aspects of case monitoring or health surveillance, focusing on maintaining the principles of PHC and discussing the vulnerability of pregnant women, especially in view of the increase in cases of violence — an action that is not addressed in other documents. Finally, the set of documents of the MS address all axes and actions identified as essential for PHC during the pandemic; nonetheless, such are carried out in an uncoordinated manner with states and municipalities throughout the year, often following the pressure placed by international and national published documents or by examples put into practice by many municipalities.

This set of guidelines that establish the role of PHC should have been led by the MS and placed within the scope of the first national contingency plan to tackle COVID-19, which never existed. The lack of coordination of the MS led many municipalities to close the doors of PHC and suspend health care, leaving populations and territories without assistance. The absence of PHC in the care of mild cases of COVID-19 had overburdened hospitals, which collapsed in several states during the first year of the pandemic, even with the expansion of infirmary beds and intensive care units exclusive to COVID-19.[25]

**Table 1.** Analysis of the guidance for Primary Health Care during the pandemic according to axes of action.

| Axes | Actions | World Health Organization | National Council of State Health Secretaries | Front for Life | Ministry of Health | SBMFC |
|---|---|---|---|---|---|---|
| Health Surveillance | Tracking of suspected cases | 1 | 0 | 1 | 1 | 0 |
| | Tracking of contacts | 0 | 0 | 0 | 1 | 0 |
| | Testing at UBS | 0 | 0 | 0 | 1 | 0 |
| Monitoring of cases | Monitoring of mild cases | 1 | 1 | 1 | 1 | 0 |
| | Monitoring of hospital discharges | 0 | 0 | 0 | 1 | 0 |
| Information on care and prevention | Prevention measures | 1 | 1 | 1 | 1 | 0 |
| | Health education (information dissemination) | 1 | 1 | 0 | 1 | 1 |
| Maintenance of PHC principles | Continued care (chronic patients/ pregnant women/children) | 1 | 1 | 1 | 1 | 1 |
| | Coordination of care (integration with other services) | 1 | 0 | 1 | 1 | 1 |
| | Integrality (access to complaints other than flu-like syndrome: vaccines, etc.) | 1 | 1 | 1 | 1 | 0 |
| | Maintenance of access | 1 | 1 | 1 | 1 | 1 |
| Special attention to vulnerable groups | Pregnant women | 1 | 0 | 0 | 1 | 1 |
| | Older adults | 1 | 1 | 0 | 1 | 0 |
| | Homeless population | 0 | 1 | 0 | 1 | 0 |
| | Indigenous people | 0 | 0 | 0 | 1 | 0 |
| | Quilombola communities | 0 | 0 | 0 | 0 | 0 |
| | Disabled people | 1 | 0 | 0 | 0 | 0 |
| | Chronic patients | 1 | 1 | 0 | 1 | 0 |

SBMFC: Brazilian Society of Family and Community Medicine; UBS: Health Center (*Unidade Básica de Saúde*); PHC: Primary Health Care. Caption: 1 – Yes, it is addressed in the document; 0 – Not addressed in the document.

## CONCLUSION

The strategy of Brazil to combat the pandemic, from the perspective of the coordination of the MS, failed in underestimating the role of PHC. Even in view of the recommendations of several national and international entities on the need to focus on PHC for providing care to mild cases and the containment of the pandemic in the territories, very little has been done; the presented guidance were fragmented, unagreed, and uncoordinated. The documentary analysis shows that little of what had been proposed by the MS was effectively implemented by the municipalities, potentially due to issues related to the lack of financial resources, adequate guidance, human resources, access to inputs, and training in a coordinated manner. If provided with resources, family health teams could have made a difference in the speed of pandemic control and saved millions of lives in the country.

Given this situation, and understanding that the pandemic is still ongoing in Brazil, there is a need to resume the centrality of PHC as coordinator of health care in the SUS, even to tackle the COVID-19 pandemic. In addition to monitoring the current pandemic, it will be necessary to ensure access to post-

pandemic care, suppressed chronic conditions,[26] COVID-19 sequelae, and mental health issues caused by prolonged social isolation. To this end, the MS must occupy its coordinating place also in the actions of PHC.

## CONFLICT OF INTERESTS

Nothing to declare.

## AUTHORS' CONTRIBUTIONS

MF: Formal analysis, Conceptualization, Data curation, Writing – original draft, Writing – review & editing, Methodology. LMMF: Formal analysis, Conceptualization, Data curation, Writing – original draft, Writing – review & editing, Methodology. AM: Formal analysis, Conceptualization, Data curation, Writing – original draft, Writing – review & editing, Methodology.

## REFERENCES

1. Sachs JD, Karim SA, Aknin L, Allen J, Brosbøl K, Barron GC, et al. Lancet COVID-19 Commission Statement on the occasion of the 75th session of the UN General Assembly. Lancet 2020;396(10257):1102-24. https://doi.org/10.1016/S0140-6736(20)31927-9
2. Rocha R, Atun R, Massuda A, Rache B, Spinola P, Nunes L, et al. Effect of socioeconomic inequalities and vulnerabilities on health-system preparedness and response to COVID-19 in Brazil: a comprehensive analysis. Lancet Glob Health 2021;9(6):e782-e792. https://doi.org/10.1016/S2214-109X(21)00081-4
3. Lal A, Erondu NA, Heymann DL, Gitahi G, Yates R. Fragmented health systems in COVID-19: rectifying the misalignment between global health security and universal health coverage. Lancet 2021;397(10268):61-7. https://doi.org/10.1016/S0140-6736(20)32228-5
4. Boyce MR, Katz R. Community health workers and pandemic preparedness: current and prospective roles. Front Public Health 2019;7:62. https://doi.org/10.3389/fpubh.2019.00062
5. Miller NP, Milsom P, Johnson G, Bedford J, Kapeu AS, Diallo AO, et al. Community health workers during the Ebola outbreak in Guinea, Liberia, and Sierra Leone. J Glob Health 2018;8(2):020601. https://doi.org/10.7189/jogh-08-020601
6. Shi L, Starfield B, Xu J. Validating the adult primary care assessment tool. Journal of Family Practice 2001;50(2):161-75.
7. World Health Organization. Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19). China: World Health Organization; 2020.
8. Lorenzo SM. La pandemia COVID-19: lo que hemos aprendido hasta ahora desde España. APS em Revista 2020;2(1):28-32. https://doi.org/10.14295/aps.v2i1.66
9. Tasca R, Massuda A. Estratégias para reorganização da Rede de Atenção à Saúde em resposta à pandemia COVID-19: a experiência do Sistema de Saúde Italiano na região de Lazio. APS em Revista 2020;2(1):20-7. https://doi.org/10.14295/aps.v2i1.65
10. OECD. Tackling Coronavirus (COVID-19): Contributing to a Global Effort. Beyond containment: health systems responses to covid-19 in the OECD [Internet]. 2020 [cited on July 01, 2021]. Available at: http://www.oecd.org/coronavirus/policy-responses/beyond-containment-health-systems-responses-to-covid-19-in-the-oecd-6ab740c0/
11. Ang KT, Rohani I, Look CH. Role of primary care providers in dengue prevention and control in the community. Med J Malaysia. 2010;65(1):58-62. PMID: 21265251
12. Wynn A, Moore KM. Integration of primary health care and public health during a public health emergency. Am J Public Health 2012;102(11):e9-e12. https://doi.org/10.2105/AJPH.2012.300957
13. Deckers JGM, Paget WJ, Schellevis FG, Fleming DM. European primary care surveillance networks: their structure and operation. Fam Pract 2006;23(2):151-8. https://doi.org/10.1093/fampra/cmi118
14. Hogg W, Huston P, Martin C, Soto E. Enhancing public health response to respiratory epidemics: are family physicians ready and willing to help? Can Fam Physician 2006;52(10):1254-60. PMID: 17279185
15. World Health Organization. Role of primary care in the COVID-19 response. Manila: WHO Regional Office for the Western Pacific; 2020.
16. Redwood-Campbell L, Abrahams J. Primary health care and disasters-the current state of the literature: what we know, gaps and next steps. Prehosp Disaster Med 2011;26(3):184-91. https://doi.org/10.1017/S1049023X11006388
17. Wyper GMA, Assunção R, Cuschieri S, Devleeschauwer B, Fletcher E, Haagsma JA, et al. Population vulnerability to COVID-19 in Europe: a burden of disease analysis. Arch Public Health 2020;78:47. https://doi.org/10.1186/s13690-020-00433-y

18. Câmara SF, Pinto FR, Silva FR, Gerhard F. Vulnerabilidade socioeconômica à COVID-19 em municípios do Ceará. Rev Adm Pública 2020;54(4):1037-51. https://doi.org/10.1590/0034-761220200133
19. Santos JPC, Siqueira ASP, Praça HLF, Albuquerque HG. Vulnerabilidade a formas graves de COVID-19: uma análise intramunicipal na cidade do Rio de Janeiro, Brasil. Cad Saúde Pública 2020;36(5):e00075720. https://doi.org/10.1590/0102-311X00075720
20. Eugenio SJ, Ventura CAA. Estratégia saúde da família: iniciativa pública destinada a populações vulneráveis para garantia do direto à saúde – uma revisão crítica da literatura. Cad Ibero Am Direito Sanit 2017;6(3):129-43. https://doi.org/10.17566/ciads.v6i3.402
21. Rosendo TMSS, Roncalli AG. Maternal near misses and health inequalities: an analysis of contextual determinants in the State of Rio Grande do Norte, Brazil. Cienc Saude Colet 2016;21(1):191-201. https://doi.org/10.1590/1413-81232015211.20802014
22. Fernandez MV, Pinto HA. Estratégia intergovernamental de atuação dos estados brasileiros: o Consórcio Nordeste e as políticas de saúde no enfrentamento à covid-19. Saúde em Redes 2020;6(Supl. 2):7-21. https://doi.org/10.18310/2446-4813.2020v6n2%20Suplemp211-225
23. Moraes EN, Viana LG, Resende LMH, Vasconcellos LS, Moura AS, Menezes A, et al. COVID-19 nas instituições de longa permanência para idosos: estratégias de rastreamento laboratorial e prevenção da propagação da doença. Ciênc Saúde Coletiva 2020;25(9):3445-58. https://doi.org/10.1590/1413-81232020259.20382020
24. Vitória AM, Campos GWS. Só com APS forte o sistema pode ser capaz de achatar a curva de crescimento da pandemia e garantir suficiência de leitos UTI. Frente Estamira de CAPs [Internet]. 2020 [cited on July 10, 2021]. Available at: https://frenteestamira.org/wp-content/uploads/2020/04/A.Vit%C3%B3ria-Gast%C3%A3o-W.-S%C3%B3-APS-forte-assegura-achatar-a-curva-e-funcionamento-de-leitos-de-UTI.-mar%C3%A7o2020.pdf
25. Boletim Observatório Covid-19. Boletim Extraordinário, 16 de março de 2021. [Internet]. 2021 [cited on July 10, 2021]. Fiocruz. Available at: https://portal.fiocruz.br/sites/portal.fiocruz.br/files/documentos/boletim_extraordinario_2021-marco-16-red-red-red.pdf
26. Bigoni A, Malik AM, Tasca R, Carrera MBM, Schiesari LMC, Gambardella DD, et al. Brazil's health system functionality amidst of the COVID-19 pandemic: an analysis of resilience. Lancet Reg Health Am 2022;10:100222. https://doi.org/10.1016/j.lana.2022.100222