HEALTH SYSTEMS & REFORM
2023, VOL. 9, NO. 2, 2205726
https://doi.org/10.1080/23288604.2023.2205726

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RESEARCH ARTICLE

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Hospital Resilience in Three COVID-19 Referral Hospitals in Brazil

Karla Myrelle Paz de Sousa [a], Sydia Rosana de Araújo Oliveira [a], Betise Mery Alencar Sousa Macau Furtado [b], Ana Lucia Ribeiro de Vasconcelos [a], Stéphanie Gomes de Medeiros [c], Gisele Cazarin [a], Aletheia Soares Sampaio [a], and Valéry Ridde [d]

[a]Department of Public Health, Instituto Aggeu Magalhães, Fiocruz, Pernambuco, Brazil; [b]Department of Nursing, University of Pernambuco, Nossa Senhora das Graças Nursing School, FENSG/UPE. FOP/UPE, Pernambuco, Brazil; [c]Department of Sociology, Federal University of Pernambuco (UFPE), Pernambuco, Brazil; [d]Université Paris Cité, IRD, Inserm, Ceped, Paris, France

ABSTRACT

Health crises, such as the COVID-19 pandemic, challenge health systems in demonstrating resilience—the ability to cope with change, manage challenges, and adapt in order to retain their effectiveness. Understanding how such challenges affect and produce reactions in those involved in this response is extremely important. This study evaluated resilience in three referral hospitals in the city of Recife, Pernambuco, Brazil—one public, one private, and one philanthropic hospital—by examining the coping activities adopted by the nursing staff working on the COVID-19 frontline. A multiple case study was carried out, using a qualitative approach, triangulating data from direct observations, document analysis, and interviews with 21 nursing professionals working in management and care provision. Data were collected from April to October 2020. The interviews were transcribed and analyzed based on the resilience categories defined by Blanchet (2017): absorption capacity, adaptive capacity, and transformative capacity. Four themes were considered relevant to the objectives of this study: institutional support, access to personal protective equipment (PPE), work relationships, and fear and mental health. Adaptive capacity was demonstrated concerning the four themes analyzed, absorption capacity was demonstrated in two themes, and no transformative capacity was identified. The study highlighted that the health crisis was challenging for all the hospitals studied, regardless of their legal-administrative status. No differences were observed among them in terms of resilience.

ARTICLE HISTORY
Received 12 September 2022
Revised 17 April 2023
Accepted 18 April 2023

KEYWORDS
COVID-19; hospital; organization; pandemics; resilience

Introduction

COVID-19 has highlighted the global vulnerability to the spread of known and new diseases considered as a public health emergency.[1] Throughout the COVID-19 pandemic, a crisis scenario has been observed with developments that drastically has affected both the health and economic sectors and deepened global social inequities.[2]

The shock caused by COVID-19 challenged health systems, requiring rapid response to meet population demand. For this, systems needed to be structurally and financially prepared, able to rely on resilient health professionals capable of absorbing and adapting to the new demands and transforming the care provided.[3]

Resilience, as applied to health, stems from the concept of disaster risk reduction,[4] which consists of incorporating learned lessons from previous crises into the standard routines of health systems management and care provision. In this situation, health professionals constitute structuring elements in the response to crisis events, mainly in hospital settings, while their own physical health and emotional well-being are affected.[5,6]

The pandemic exerted great pressure on hospitals and health professionals, especially in Latin American and Caribbean (LAC) countries, due to high fatality rates and social and infrastructural inequalities.[7,8] LAC health systems responded to the pandemic by prioritizing COVID-19 care over essential health services. This situation had immediate and long-term implications, including excess mortality, both related and unrelated to COVID-19 infection, and a reduction in life expectancy in these countries by 2–10 years.[9] Building health system resilience to respond to the pandemic challenges facing LACs is critical.[10,11] Several initiatives have been implemented in these countries to strengthen health human resources, including staff recruitment, exchange of professionals within and between institutions, and expansion of roles and task sharing, among others.[12] As well, digital health technologies have been integrated

CONTACT Sydia Rosana de Araújo Oliveira sydia.oliveira@fiocruz.br Instituto Aggeu Magalhães, Fiocruz, Pernambuco, Brazil

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to improve access to health services,[13] training of health professionals,[14] and care quality,[15] demonstrating resilience toward COVID-19.

Hospitals are complex structures, both with regard to the organizational structure—hospitals with different legal and administrative statuses may have unequal supply and access to services[16,17]—and the repercussions on workers' health, such as work overload and risk of cross-infection, which can have an impact on health professionals.[18,19] Nursing professionals are the largest group on the health team and have the longest contact time with patients,[20] therefore, specific studies on this professional category are important.

Based on this, and understanding that nurses face numerous challenges, whether regarding the extreme environment and workload or due to exposure to other stressors such as uncertainty about the disease,[21] this study evaluated resilience in three reference hospitals in the city of Recife, Pernambuco, Brazil, examining coping actions taken by the nursing staff working on the COVID-19 frontlines.

Methods

This was an evaluative, qualitative, multiple case study.[22] This study was part of the HoSPiCOVID project.[23] Three cases—a public hospital, a private hospital, and a philanthropic hospital—were selected to provide a diversity of legal-administrative statuses. In October 2020, Brazil had more than five million confirmed cases and approximately 160 thousand deaths, being the second country most affected by COVID-19 in number of deaths until March 2023, accounting for 699,634 deaths.[24]

Inconsistencies in the strategies adopted by the national government resulted in divergences between the state and municipal management of COVID-19,[25] which required hospital management to mitigate the impact of the pandemic.[26] Therefore, in the northeast region of Brazil, public managers and health services created the Scientific Committee to Combat the Coronavirus as a strategy to guide decision-making and meet the demands to address grievance.[27]

The public health service is a teaching hospital of the state government of Pernambuco and a reference center in the management of infectious diseases, with 400 beds. Private and philanthropic hospitals were pioneers in the nonpublic care network to offer COVID-19 care, opening 270 and 120 beds, respectively (Table 1). Such hospitals were considered a reference for treating COVID-19 cases in Pernambuco, a state that accounted for more than 160,000 cases and 8,000 deaths for the same period, with its capital, Recife, leading the number of cases since the first epidemiological weeks.[24] This context exposed frontline health professionals to the challenge of caring and staying healthy, revealing nursing professionals to be among the most affected.[28]

The hospitals were intentionally chosen to examine the response of the processes adopted by the nursing professionals in coping with COVID-19 in different hospital settings. Data were collected between April and October 2020, months between the increase and greater stabilization of cases. Data collection consisted of two direct observations with report production, and document analysis (n = 10) of conduct protocols, guidelines and information guides that could provide details of the scenario of services in the pandemic. Twenty-one semi-structured interviews were carried out with intentionally selected nursing professionals who worked in the management and/or direct provision of care for COVID-19 (Table 2). Technical saturation caused the interruption of data collection.[29] Data triangulation was used for comprehensive understanding and interpretation of cases.[22]

The nursing professionals included had to have been in their role/position for at least six months and be available and interested in participating in the study. Interviewees were purposefully chosen based on their experience in the hospital response to the pandemic.[29] The snowball strategy[30,31] was used to identify other actors familiar with the matter under analysis. The data saturation criterion was applied for purposes of data collection termination.[32]

Interviews were conducted using a pre-tested interview guide based on the HoSPiCOVID framework[15] and were recorded and stored digitally. All interviews were transcribed and coded using MAXQDA Analytics Pro 2020®.

Table 1. Characterization of the three referral hospitals for COVID-19 in Recife, Pernambuco, Brazil, 2020.

	Public	Private	Philantropic
Types of hospitals	specializing in infectious parasitic diseases	generalist	specializing in women's and children's health
Number of beds for COVID-19 in the case study hospitals	600	270	120
Number of hospital staff (health and administrative professionals)	3,200	3,700	5.000
Types of COVID-19 patients receiving care	Medium and severe cases	Medium and severe cases	Medium and severe cases

Note: All numbers are rounded to whole numbers.
Source: Authors.

Table 2. Nurses, key informants from three referral hospitals for COVID-19 in Recife, Pernambuco, Brazil, 2020.

Hospitals	Clinical management	Care provision	Total
Public hospital	1	9	10
Philanthropic hospital	-	6	6
Private hospital	-	5	5

Source: Authors.

The analysis was performed using an inductive approach. Data content was qualitatively analyzed, based on Bardin.[33] The data were organized into four themes considered relevant to the study's objectives—institutional support; access to personal protective equipment (PPE); work overload; fear and mental health—and pertinent for understanding the resilience capacity of the hospitals studied. Resilience capacity was based on the conceptual categories defined by Blanchet[34] 1:) absorptive capacity (providing the same level of services using the same level of resources); 2) adaptive capacity (providing the same level of services with fewer and/or different resources); and 3) transformative capacity (transforming in order to respond to a changing environment).

The study followed the recommendations of Resolution No. 466/2012 of the National Health Council and was approved by CONEP (CAAE: 30982620.8.0000.0008).

Results

This study revealed adaptive capacity in the three hospitals studied regarding institutional support, access to PPE, work relationships, and fear and mental health. Absorptive capacity was observed in relation to institutional support and access to PPE. No transformative capacity was observed (Table 3).

Institutional Support

Institutional support was observed in the three cases studied. Institutional support, understood as strategies to improve and reinforce the care provided, was expressed by interviewees from all the hospitals as one of the most salient features contributing to the capacity to absorb and adapt to crisis scenarios.

Managers' support and involvement in decision-making and in ensuring clear and realistic communications were crucial in providing information and training to nurses. It was noted, for example, in the public hospital that continuing education activities were conducted before the arrival of suspected patients. Nursing professionals described the tension they felt while waiting to respond to the first cases, and how institutional support, through team training, was essential to reinforce their work on the frontline.

> (. . .) what I've seen lately that has contributed and made a difference: team training, in-service training, (. . .) to align the work of the entire multidisciplinary team, whether nutritionist, nurse, doctor, physical therapist, and those are the ones actually dealing with these patients in need. I think the training made the difference. (Public hospital)

Similarly, the leaders of nonpublic hospitals provided up-to-date information on COVID-19, clearly establishing priorities and actions to be followed, as well as protective measures for patients and professionals. As care protocols changed, all professionals interviewed reported having to adapt to new formats for disclosing information and new procedures (e.g., infection control protocols, use of PPE, donning and doffing sequences, respiratory protection measures, the flow of people, and teamwork).

Table 3. Contents analyzed according to the conceptual categories of resilience defined by Blanchet in three referral hospitals for COVID-19 in the city of Recife, Pernambuco, Brazil, 2020.

	Conceptual categories of resilience		
Content analyzed	Absorption	Adaptation	Transformation
Institutional support	Continuing education activities were conducted before the arrival of suspected patients.	As care protocols changed, all professionals adapted to the information dissemination formats and new procedures.	Unobserved
Access to PPE*	All the hospitals were able to absorb the demand imposed by the pandemic, maintaining their functions and care provision.	Training the teams on rational use helped reduce consumption.	Unobserved
Work relationships		Adaptations were made to attract new human resources and to manage the reduced number of professionals in service.	Unobserved
Fear and mental health		Strategies such as telephone helplines with psychological support within the organizational structure, mutual support among service professionals, and proper care for mental health.	Unobserved

*PPE: Personal protective equipment.
Source: Authors.

> The institution was always ready for any questions (. . .) They were always offering courses, both online and in person, always asking whether we had any questions about standards, techniques, donning and doffing [of PPE]. (Private hospital)

Communication was adapted so that all nurses could access information, and strategies were implemented for digital messaging in addition to procedures available in print. However, more experienced nursing professionals sometimes needed to train coworkers in patient care to meet the urgent demands generated by the pandemic:

> It was the nurse who had to train, during the procedure, in how to handle the infusion pump, or how to maneuver the patient, the risks related to that patient. (Public hospital)

In general, anticipating uncommon situations helped allay insecurities and restored a sense of control. The nurses interviewed reported feeling safe in the work environment in relation to continuous supervision and the management team being present and available.

In this study, all the hospitals were able to offer institutional support to nurses and all their health teams. Initially, they offered assistance based on nursing professionals' skills using resources already in place before the pandemic, and later, they used new, different means to manage professionals' practices for coping with the disease.

Access to Personal Protective Equipment (PPE)

Access to PPE ranged from the wide supply to periods of rationing and/or scarcity. Of note, however, was the homogeneity of reports from nursing professionals in the nonpublic hospitals, who felt secure when working, even when facing an unanticipated threat.

> We have lots of equipment(. . .) So, that provides some security. Perhaps my perspective is quite different from people working in the public [hospital]. Here (. . .) we have the gown, the mask (. . .) I work 24 hours wearing a mask. Super calm! (Private hospital)

In the public hospital, reports indicated that before the COVID-19 pandemic, access to PPE was easy, while during the pandemic there were times of scarcity, with daily rationing adaptations needed to avoid shortages. Professionals began receiving supplies in smaller quantities, resulting in intermittent and/or prolonged use of the same PPE. Such actions negatively impacted routine care in these hospital units, resulting especially in physical discomfort:

> (. . .) we only receive two gowns in a 12-hour shift, and we spend six, seven hours without drinking water and without going to the bathroom. (Public hospital)

The unavailability of PPE in national and international markets led to rationing in the institutions. However, interviewees noted that providing training to teams on rational use, based on an internal study, helped reduce consumption in response to this challenge. Also of note, in Brazil, the procurement process for supplies in a public hospital differs from that of hospitals with other legal-administrative statuses, suggesting a possible difference among the hospitals studied regarding PPE acquisition.

However, the present study demonstrated that all hospitals, even if not similarly, were able to absorb the demand imposed by the pandemic, maintaining their functions and providing care.

Work Relationships

The COVID-19 pandemic produced a significant increase in the demand for care in hospitals within a short time frame. As observed, nursing professionals experienced excessive workloads at the three hospitals studied. Accordingly, as a coping strategy, more workers were recruited and hired. However, most had no experience in urgent/emergency care, nor in intensive care, so this did not actually alleviate the workload.

In the context of the pandemic, in all the hospitals studied, excessive workload resulted in the resignation, illness, or dismissal of many nurses, such that those who remained needed to adapt to the increased workload, with detrimental consequences to physical and mental health and interpersonal work relationships:

> (. . .) a lot of people joined the hospital, either as recruits or as contract workers, but many dropped out, so I had to do double shifts, my colleague too, several people there [did] double shifts because people were leaving because they were afraid, right? (Public hospital)

Physical fatigue, associated with emotional stress, negatively affected quality of care and interpersonal relationships. Some nurses felt that service quality was being neglected, leading to complaints and unease among the professionals. There was a sense that interpersonal work relationships, already weakened by long work hours and restrictive protocols of interaction, were deteriorating.

Added to this, while the effects of the heavy workload were felt in all the hospitals studied, reports of pressure from the management team and/or patients predominated in nonpublic hospitals on the nurses predominated:

> It's been challenging because it's not just about treating patients, the number of patients is very large, but also the pressure from management, supervisors (. . .), and even the lack of understanding to recognize that. (Private hospital)

Work overload made coping with COVID-19 more challenging, as routine difficulties were compounded by pressure to maintain the expected standard of care in the face of the complexity of the disease and the need to care for patients and oneself. However, in all three cases, it was not possible to continue providing care based on the previous levels of nursing professionals, such that adaptations were required either to attract new human resources or to manage with the reduced number of professionals in service.

Fear and Mental Health

In all the cases studied, working on the COVID-19 frontlines triggered or intensified sensations in nurses and fears of acquiring the infection and/or transmitting it to family members. Added to these, there were fears around patient care and distress caused by the illness/death of coworkers.

Another relevant point raised by interviewees from all three hospitals was that the restrictive measures and the need for social isolation, combined with distance from family, amplified the tensions inherent to fear, such as anguish, insecurity, hopelessness, and the responsibility for not becoming a transmitter of the disease:

> So, the fear of the pandemic is added to family problems, to the issue of social isolation, and then, the fears, anxieties, and anguish, they're huge (...) And my greatest anguish is fear of taking the disease home. (Public hospital)

Actions were undertaken for mental health care. Creating a supportive environment for the team within the organization could minimize or anticipate issues related to the mental health of the nursing staff. Managers prepared for mental health issues among nurses by identifying support resources to provide additional care. Strategies in the studied hospitals ranged from telephone support with psychological counseling within the organizational structure to mutual support among service professionals. Several nurses were also practicing self-care for mental health, in order to cope with the crisis and remain active with patients.

> I went back to therapy. It was something I was already doing, but during the pandemic it had to be suspended, but then I had to go back even though the sessions were virtual. (Philanthropic hospital)

Although psychotherapy is the predominant care approach in issues related to mental health, interviewees mentioned seeking other means and forms of care, such as integrative and complementary health care, or turning to faith and spiritual experiences. Some had reduced their exposure to the news and to the heavy flow of information being disseminated.

Some interviewees perceived psychological resilience—that is, the personal ability to deal with stressful circumstances—to be a protective factor. However, having institutional support was fundamental to the mental health of these nurses. In the three hospitals studied, given the context imposed by the pandemic, it was observed that even with the adoption of means of protection and care for the workers' mental health and to maintain the roles performed by nursing professionals, and consequently by the hospital, these were affected by the limited availability of existing resources, requiring adaptations to use new and/or different means of care.

Discussion

This study demonstrated that several factors influenced the resilience capacity of the hospitals studied. Absorptive and adaptative capacities, as conceptualized by Blanchet,[34] were seen in the three hospitals, demonstrating that all were able to provide services with existing resources and/or readjust them to the needs imposed by the management of the disease. It was not possible to observe, from the reports, transformations in infrastructure and/or other such actions taken in these hospitals in response to the pandemic.

Silva et al.[35] state that, when individuals are exposed to adverse situations, changes call for resilient behaviors, which require preparation, experience, and learning from such experiences. In the context of COVID-19, nurses were indispensable in direct patient care. Maintaining these professionals on the frontline proved to be an immense challenge, given their need for support so they could continue to provide patient care while contending with the risks, potential gaps in training, new workflows, and supply shortages.[36,37]

The nurses from all three hospitals needed to absorb a lot of new information about the pathogen and its repercussions in order to improve and adapt to their work processes. In health crisis events, institutional initiatives are thus powerful means of ensuring creativity and autonomy for these professionals to develop their work in a resilient way.[38]

Institutional support was seen, initially, in continuing education activities for both existing and new nurses. Interviewees reported receiving training on COVID-19 care protocols, especially on sequences for donning and doffing PPE and its correct use.

In some studies,[37,39] most nurses working in the pandemic reported that they did not receive training or considered it insufficient, making them more exposed to occupational risks. However, interviewees

of the three cases studied considered training to have been a key supportive factor for their performance and that of the team.

As the pandemic progressed, COVID-19 assistance protocols changed often, prompting adaptations in training due to the need for faster, timely, and effective communication, the move away from using a dedicated space to digital tools, and new staff being trained by experienced nurses during patient care. A recent study highlighted the effectiveness of digital tools in minimizing the impacts of COVID-19 on health systems and contributing to the adoption of new practices and health care models.[40]

Despite the numerous changes experienced in coping with COVID-19, interviewees from the hospitals reported feeling safe when performing their work, due to the support and training received from managers who were present and available. Institutional support in health emergencies, through continuing education, has been discussed as a tool for reducing tensions and standardizing behaviors that generate quality of care and enhance the safety of patients and health professionals.[41,42]

In the COVID-19 context, the feeling of security reported by interviewees from the philanthropic and private hospitals came from having adequate access to PPE, with the assurance of a work environment that inspired more confidence. In the public hospital, interviewees said that PPE were not lacking, but were in short supply, which led to the need to adapt and establish new rules for its use. However, worldwide, the accelerated and unanticipated search to procure supplies and PPE, and their potential scarcity, became a challenging reality for health services in several countries.[43]

The hospitals studied needed to adjust their health professional staffing levels through recruitment and/or hiring. However, the shortage of qualified workers led to hiring nurses without specific training in urgent/emergency care or intensive care, which created work overload for the professionals interviewed, who, besides being responsible for their own work, had to collaborate with newcomers in providing care. Excessive workload is a determining factor that must be addressed by management authorities, as it leads to high turnover and even human resources shortages.[43]

A study showed that individuals' inability to manage the demands of a job is directly associated with divergence between the work requirements to which they are subjected and the resources available to perform the work, causing high stress.[44] This was corroborated by the interviewees' reports about increases in both workload and intensity of work, due to insufficient qualified nursing professionals and increased demand for care, leading to physical and mental impairments, with potential negative impacts on service quality and interpersonal relationships in the team. Schultz et al.[38] noted that nurses' physical and mental suffering has been sustained and exacerbated during the pandemic.

In nonpublic hospitals, there were many reports from professionals regarding the pressure from both the management and the patients themselves to perform well and maintain the quality of care, causing stress with physical and mental exhaustion. Dal'Bosco et al.[45] suggested that conditions inherent to employment in private hospitals, such as instability and frequent changes of position/role, constitute a significant factor for the occurrence of psychological disorders, in contrast to the public service sector, where layoffs are almost nonexistent.

Every day, nurses deal with numerous internal and external stressors, putting their work and patient safety at risk.[38] Interviewees from all the hospitals studied reported sensations and feelings of fear permeating their functions. Similar to what was observed in another study, high stress was observed, associated with episodes of anxiety and depression.[46] Another factor contributing to fear and insecurity among the interviewees in all three hospitals was the social isolation imposed to contain the disease. A study by Ribeiro et al.[46] proposed strategies and coping techniques for dealing with the aggravating factors of distancing and/or social isolation, to foster preventive actions on issues related to mental health.

Thus, mental health care became an essential component to be adopted, not only in terms of self-care, but also in order to continue coping with COVID-19. As mentioned, some nursing professionals from the public and the philanthropic hospitals reported seeking or returning to psychotherapeutic support; others sought integrative and complementary health care; some found comfort in faith and spiritual experiences; and some received psychological support from the hospital where they worked. Some also reduced their exposure to news, focusing only on information necessary for their work. Such actions are reported by some authors[47] as essential to protect workers' mental health in the short and long terms.

Some limitations of this study should be noted. Data collection took place during the 2020 peak of the COVID-19 pandemic in Brazil, such that it was not possible to carry out a greater number of direct observations. Also, data collection involved only nursing staff, mostly care providers, and was organized during the initial months of the pandemic, at a time of great pressure on the health system, which may explain the absence of observations on transformative capacity

related to significant changes in the system structure. More significant changes can be expected in the long term, and further research could contribute to this regard.

Conclusions

Health crises will always be challenging for health systems, especially when there are chronic problems whose solution does not depend solely on the health sector. The crisis prompted by COVID-19, with its considerable dissemination potential, magnitude, and impact, shows the urgent need for investments to structure the health system, which includes training professionals, not just nursing, in sufficient numbers to absorb, adapt, and transform care quickly and effectively.

The context experienced in Brazil at the time—uncertainties about the injury and divergences between its administrative spheres—caused numerous challenges that resulted in similar responses by the health services as a whole. This is illustrated by the municipality of Recife, in Pernambuco, and its hospital network, which obtained assistance from the COVID-19 Combat Committee to make strategic and timely decisions to face the disease. The observation of such facts and the experiences reported by the interviewed nurses did not allow the identification of significant differences between the hospitals studied in terms of resilience during the period.

This study demonstrated that health crises were challenging for all hospitals and that the greater contribution of financial resources provided access to protection factors for all those involved, but that, regardless of the legal-administrative situation of the service, health professionals, mainly nurses, faced challenges that required the development of resilient actions, to maintain their functions and health.

However, the health services studied dealt with and overcame the difficulties, demonstrating good resilience in the categories of absorption (institutional support and access to PPE) and adaptation (institutional support, access to PPE, work overload, fear, and mental health). There was recognition that surmounting the difficulties presented by the current health crisis, with the learning acquired by both management and nursing professionals, alleviated the suffering of all those involved, including both professionals and patients.

Acknowledgments

To the professionals at the reference hospital who made themselves available to participate in the study, even after an exhaustive period of work and the management team who always supported us during the research.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

Funding

This study was supported by the National Council for Scientific and Technological Development – CNPq (Master's scholarship grant) and ANR, CIHR.

ORCID

Karla Myrelle Paz de Sousa http://orcid.org/0000-0001-9530-9200
Sydia Rosana de Araújo Oliveira http://orcid.org/0000-0002-6349-2917
Betise Mery Alencar Sousa Macau Furtado http://orcid.org/0000-0001-6344-8257
Ana Lucia Ribeiro de Vasconcelos http://orcid.org/0000-0002-4075-2210
Stéphanie Gomes de Medeiros http://orcid.org/0000-0003-3039-6272
Gisele Cazarin http://orcid.org/0000-0003-3663-4665
Aletheia Soares Sampaio http://orcid.org/0000-0002-4032-9738
Valéry Ridde http://orcid.org/0000-0001-9299-8266

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