ORIGINAL ARTICLE

NON-PHARMACOLOGICAL PUBLIC HEALTH MEASURES: ASSESSMENT OF THE PAHO GUIDE ON OUTBREAK AND EPIDEMICS RISK COMMUNICATION

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Highlights: (1) Ambiguous and false information tends to overload the healthcare system. (2) Timely responses help mitigate social and health effects in outbreak and pandemic situations. (3) Communication of health risks needs to involve greater participation from society

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NON-PHARMACOLOGICAL PUBLIC HEALTH MEASURES: ASSESSMENT OF THE PAHO GUIDE ON OUTBREAK AND EPIDEMICS RISK COMMUNICATION

ABSTRACT:

The purpose of this article is to present an evaluability study of the Guide to Non-Pharmacological Public Health Measures prepared in 2020 by PAHO in order to maximize its usefulness in risk communication in outbreak and epidemic situations. A descriptive-qualitative approach was adopted, guided by the steps: (a) Documentary research; (b) Intervention modeling; (c) Extraction of evidence on the actions proposed in the document; (d) Validation of the logical theoretical model; (e) Elaboration of evaluative questions. Documentary analysis pointed to a multiplicity of actions to reduce community transmission, prioritizing the involvement of society, in addition to governmental and non-governmental institutions. The validated logical theoretical model made it possible to identify elements that could be useful as lessons to strengthen preparedness, preparedness and response capacities within the Health System in relation to disasters and other public health emergencies.

Keywords: Risk communication, Outbreaks and pandemics, Evaluability

INTRODUCTION

In December 2019, the coronavirus SARS-CoV-2 spread rapidly across countries, infecting thousands of people, despite global efforts to prevent its spread. In addition to producing an unprecedented health crisis, it required the adoption of multiple responses in different areas[1, 2].

One of the strategies to combat the disease was the implementation of non-pharmacological interventions (NPI) to slow down community transmission and generate epidemiological and social impact[3]. Especially at the beginning of the pandemic, when vaccines were not yet available and decisions had to be made quickly, these recommendations were fundamental in reducing risks and impacts, even with a scarcity of scientific evidence on individual and combined efficacy.

With the perspective of strengthening disease control actions, the Pan American Health Organization (PAHO) launched the Guide "**Guidelines for the application of non-pharmacological public health measures to population groups in vulnerable**

situations in the context of COVID-19"[4]. The purpose was to expand access to reliable guidance on respiratory virus prevention in order to enhance the protection of individuals, their families, and communities, especially among population groups at greater risk.

Considering that the timely and accurate implementation of NPI tends to enhance risk communication, especially during a public health crisis, this article aimed to present the study of the Evaluability of the PAHO Guide in order to strengthen the implementation of the intervention and maximize its utility.

MATERIALS AND METHODS

This is an evaluability study, also known as a pre-evaluation[5,6] whose objective was to broaden the understanding of the Guidelines for the application of non-pharmaceutical public health measures to population groups in vulnerable situations in the context of COVID-19[4]. According to the proposal by Levinton et al (2010)[7], the following steps were conducted: Documentary research to describe the program and its scope of intervention, objectives, and goals; Development of the logical and theoretical model of the PAHO Guide; Extraction of evidence regarding the actions recommended in the components of the document; Validation of the theoretical logical model of the intervention and Identification of questions for a subsequent evaluative study.

(a) Documentary research – based on the search for information in official documents that touched on the preparation of the PAHO Guide, with the aim of outlining objectives, actions, and expected results in order to design the preliminary Theoretical-Logical Model (TLM). The aim was to understand who produced the document, its purpose, for whom it was constructed, and the intent behind its preparation. It was a strategic moment to define the problem and/or opportunity that motivated the implementation of the document, the context in which the document was prepared, and to map the activities that could generate the expected results. The documentary analysis allowed understanding the guidelines and regulations applicable to risk communication of the NPI and the prior identification of key concepts that were useful for constructing the TLM.

(b) Modeling of the intervention - it is based on understanding the logical theory of change to investigate how effects can be produced by integrating the hypotheses and

expectations that shape its structure and functioning. The graphic presentation makes the assumptions of the formulators more explicit by adding contextual elements that may favor or hinder the implementation of the intervention. The modeling adopted in this study was based on the version proposed and adapted by Tamaki et al[7].

(c) Evidence extraction – a search was conducted in electronic databases (PubMed, Scopus, and Web of Science) for evidence related to the activities highlighted in the components recommended in the document. The search strategy adopted the period from March 2020 to July 2021 as a temporal delimitation and used the key terms: COVID-19, non-pharmaceutical intervention, risk communication, intersectorality, community participation, information and action, learning, and monitoring and evaluation.

(d) Validation of the theoretical-logical model – useful for increasing the validity of the construct and, in this research, involved consultation with stakeholders, policymakers, and implementers of the policy, and experts in the topics of risk communication and NPI. The previously prepared TLM was sent to the actors for consultation through the *Delphi*[8] technique, a systematized method of information judgment widely used to reach consensus on a given subject. Participants expressed their opinions freely and could suggest exclusions, inclusions, or modifications in the allocation of items. Preserving the anonymity of the participants, the consensus on the components of the Guide was incorporated into the final modeling with the purpose of validating the process by aligning the component actions of the intervention with the expected results.

(e) Development of an evaluation matrix - This stage aimed to map what needed to be evaluated, including guiding evaluative questions consistent with the TLM and the stage of development of the intervention. The product of this stage was the construction of a monitoring and evaluation matrix for the OPAS Guide. This research was approved by the Research Ethics Committee of the Oswaldo Cruz Institute with opinion number CAAE 52689521.6.0000.5248, on October 14, 2021.

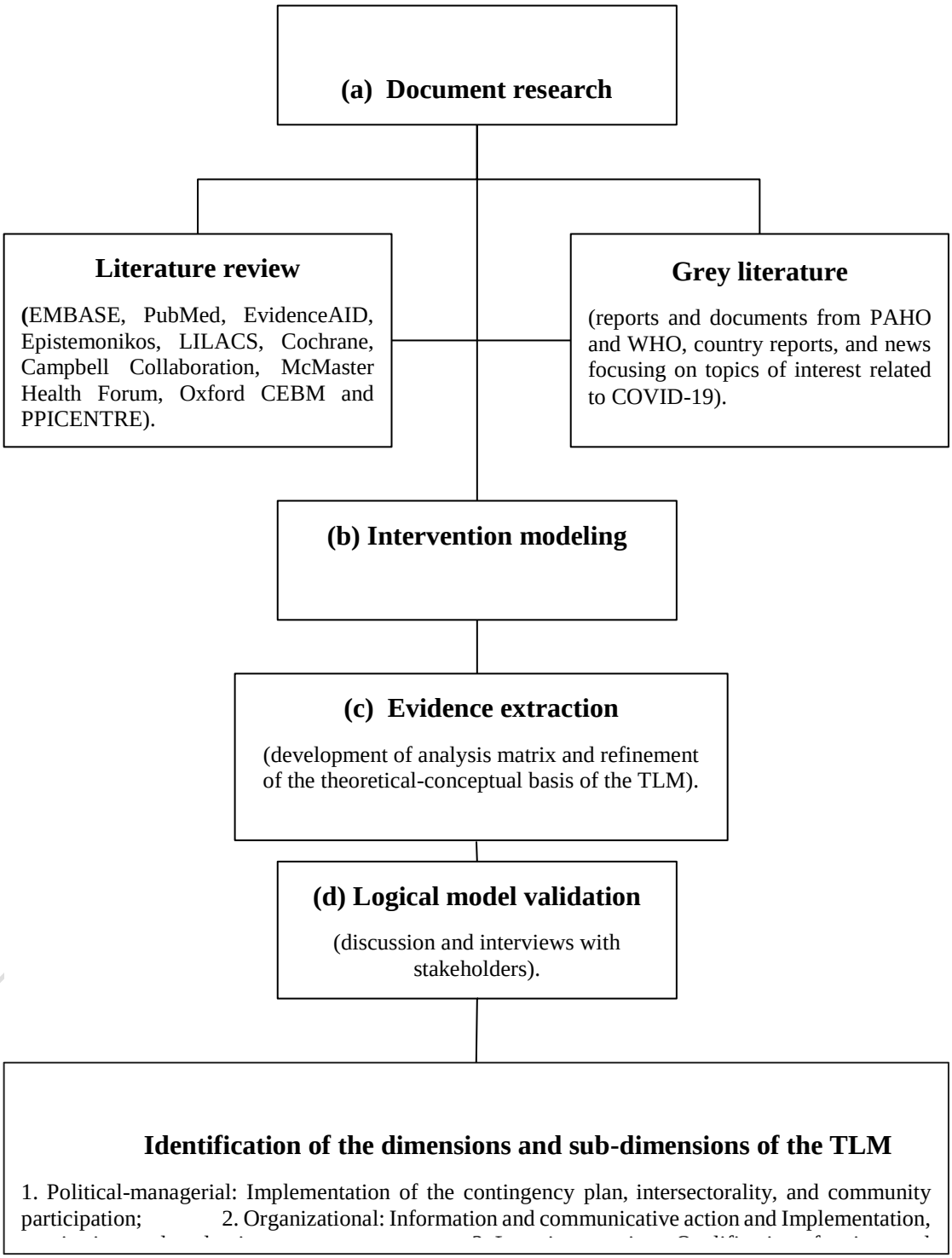

Figure 1. Stages of the feasibility study of the PAHO Guide in risk communication of outbreaks and epidemics.

RESULTS AND DISCUSSION

(a) **Documentary research -** The intention behind the preparation of the Guide, based on the epidemiological framework of the COVID-19 pandemic, was to propose guidelines that could support disease control in the population, as well as reinforce the need for adherence to individual, community, and environmental measures based on scientific evidence. The target audience was those responsible for decision-making, technical teams, and policy implementers, within central and local governments, local leaders, and the population. Its preparation involved a literature review from centers and platforms such as EMBASE, PubMed, EvidenceAID, Epistemonikos, LILACS, Cochrane, Campbell Collaboration, McMaster Health Forum, Oxford CEBM, and PPICENTRE. Databases from PAHO and WHO (World Health Organization), country reports, and news focused on topics of interest related to COVID-19 were also used as sources of information. There was concern in building a repository of references to improve understanding of COVID-19, emphasizing vulnerability as a situation that goes beyond individual and biological characteristics, being permeated by the social, economic, and political context. The document provided an analytical framework that allowed identifying possible obstacles and unintended effects associated with the implementation of preventive measures, in addition to highlighting vulnerable groups that could be affected and risk communication strategies to address them.

(b) Modeling of the intervention - The problematic situation that generated the need for the creation of the document was the COVID-19 pandemic, which in January 2020 was considered by the WHO a Public Health Emergency of International Concern[1]. Due to the high infectivity of the virus, with an exponential increase in the number of cases in countries on all continents, the main strategy to postpone the peak of the epidemic curve and reduce the spread of the disease was the adoption of NPI[3,5].

While public health measures NPI are based on risk communication to empower individuals with information that allows them to make more appropriate decisions[9]. Studies on the subject point to the potential to produce an impact on the health situation;

however, NPIs need to be adapted to the context of each country[5,10]. The preliminary TLM, presented in Figure 1, sought to representatively translate the dimensions of analysis (political management, organizational, and practice learning) and highlight risk communication and disease mitigation strategies to reduce morbidity and mortality associated with COVID-19. The recommendations focused mainly on the most impacted groups, considering possible barriers to adherence and suggestions for adaptation to protect populations, aligned with the premise of the 2030 Agenda to leave no one behind. Here, physical distancing, hand hygiene, the use of protective masks over the mouth and nose, and environmental measures emphasizing disinfection and ventilation are highlighted. Other measures related to health surveillance, such as contact tracing, isolation, quarantine, and monitoring of passengers on domestic and international travel, were also indicated in the document[9,10].

(c) **Evidence extraction –** Based on the established descriptors, 328 articles were identified, and after a preliminary screening of the titles, considering the established criteria, a reading of 193 in full was conducted. To extract evidence from the articles and subsequently perform a narrative synthesis of the main results, an analysis matrix was developed. The objective was to refine the theoretical-conceptual basis of the TLM, show how the guidelines were produced to strengthen and enhance the recommended actions, and summarize the main ideas and gaps of the investigated theme, especially regarding the most vulnerable population groups, many of whom were already in a situation of social and economic inequality even before the pandemic.

(d) **Validation of the logical model. The last step involved identifying consensus** regarding the TLM in order to minimize the risk of divergences concerning the evaluation design and the interpretation of its results. Eight stakeholders (policymakers and experts on the subject) were invited, and of these, five participated, as the others were unavailable. Although some authors consider that the number of experts recommended to compose the panel varies around 10 to 18, not exceeding 30, Powell et al (2003)[11] emphasize that there is no need for statistical representation, and the quality of the expert panel should be the basis.

We consulted experts to obtain opinions, and after one online meeting and four offline meetings, the content and flow of the TLM were reviewed, as well as the configuration of indicators. The final visual scheme of the TLM (Figure 2) clarified the theory that guided the construction of the GUIDE, with the purpose of guiding the delineation of an image closer to the real world of the intervention. The agreed model expanded the configuration into subdimensions and necessary actions to achieve the final results, that is, to delay the peak of the COVID-19 epidemic curve and reduce the spread of the disease, as well as the demand for healthcare.

This stage was an opportunity for dialogue in an attempt to identify possible collateral objectives, that is, those that were not initially projected in the document but were produced throughout the implementation process of the intervention. The dimensions and subdimensions were mapped to encompass the topics described in the document: 1) Political-managerial: Implementation of the contingency plan, intersectorality, and community participation; 2) Organizational: Information and communicative action and Implementation, monitoring, and evaluation; 3) Learning from practices: Qualification of actions and Significant learning.

Although there is not a wide literature on TLM, focusing on risk transmission in outbreak and pandemic situations, which would be important to compare differences and similarities with this study, the proposal from the Centers for Disease Control and Prevention (CDC) proved to be an important approach[12] in light of the new challenges of societies in social, political, economic, and cultural dimensions.

Dimension - Political-managerial. The emphasis was on the development of plans for preparation, response, and recovery from public health emergencies, intersectorality, and community participation. Even considering that it is necessary to think about how each country responds to a public health emergency, the need for contingency plans developed jointly (state and community) was emphasized, taking into account the central principles of equity and social justice. The role of Governments, organizations, and leaders in various environments and sectors is paramount as the pandemic exacerbated structural difficulties in society and public administration. Various countries adopted pandemic

response plans, with recommendations from WHO and PAHO, supported by evidence on effective interventions for disease control[13,14,15]. In general, the main response measures were: surveillance, laboratory support, infection control measures, assistance, pharmaceutical assistance, sanitary surveillance, risk communication, and management. However, risk governance requires coherence in documents, acts, and actions not only carried out by the health sector but by different government sectors, as a prerequisite for public trust. Reviewed literature pointed out the lack of rigor in studies for preparing responses to emergencies and risk communication, as well as few standardized instruments for monitoring and evaluating the implementation of plans[16,17,18]. There was tension among governments that, for the most part, took rapid and massive measures to mitigate the economic and financial effects of the pandemic. In places where there was a lack of leadership in formulating a timely national response, local administrations made their own decisions to respond to the epidemic with varying measures to mitigate it[16,19]. In Brazil, the Contingency Plan was based mainly on documents from the WHO, PAHO, and COVID-19: *Operational Planning Guidelines to Support Country Preparedness and Response*[16]. Flexibility of social distancing measures and the reopening of economic activities, mentioned in many plans, demonstrated fragility, especially when the pandemic was still on the rise[15]. The PAHO GUIDE emphasized that risk communication should consider intersectorality and be based on scientific production and the experience of other countries, aimed at reducing vulnerabilities and strengthening the capacities of the health sector and others involved[4]. In a survey with health professionals in Brazil, focusing on intersectoral actions to confront COVID-19, only 40% stated they had engaged in some form of coordination in the field of risk communication for the disease[20]. Countries where mitigation interventions involved alliances with community members, civil society, and activist professionals saw greater momentum in relationships with the state to meet the main needs of vulnerable groups, contributing to minimizing the worsening of health inequities[21,22,23]. It is essential to expand opportunities for the population to have greater vocalization power, especially to build more inclusive and equitable collaborative solutions[24]. Identifying the people in whom the community trusts, establishing relationships with them, and involving them in decision-making helps ensure

more participatory and context-appropriate proposals. Campos et al (2021) highlighted in their article that risk communication is more effective when considering the social and cultural context[25].

Dimension - Organizational Strengthening the health sector's response capacity to outbreaks and pandemics relies on information and communicative action as foundations to reduce the social impact caused by the disease in the territory. The document involved the right to information about the actions of prevention, preparation, response, and mitigation planned and/or adopted. Different authors have shown that when there is an increase in the dissemination of information, in a timely manner, there is greater risk perception, making the population more likely to comply with non-pharmaceutical measures, such as social distancing and the use of masks[26,27]. In turn, when there is multiple, inaccurate, and low-credibility information, it tends to generate a lack of trust in individuals, meaning that people become less likely to adopt recommendations[28]. Special attention should be given to the debate on the dissemination of dubious/misleading messages aimed at responding to rumors, questions, and comments through reliable channels. A study conducted by Ho ET AL (2020) took into account cultural issues and language to ensure that foreign domestic workers could understand public health recommendations[29]. A study conducted in Chile revealed that indigenous and Afro-descendant peoples organized themselves to confront COVID-19 by communicating strategies according to their own traditional organizations and worldview. The research also demonstrated that indigenous peoples have a high degree of self-management based on their own cultural forms, and the confrontation of outbreaks and pandemics must consider the social, economic, and cultural factors of the affected populations[30]. The importance of adapting the communication of environmental health guidelines to different audiences during the pandemic was also highlighted in the document and corroborated by various evidence[31,32,22]. Another point addressed in the Guide was monitoring and evaluation (M&E) as tools to support real-time sharing of lessons on what is working, what is not, what might work, and for whom. Strategies for the dissemination of evaluative processes, especially for decision-making regarding the

relaxation measures of the disease, could have been further explored in order to influence the architecture of communication and messages. Literature review showed that despite the significant time and resource constraints that governments faced at the height of the COVID-19 crisis, the importance of M&E in extracting lessons from their political responses to the pandemic was clear[22]. The authors recommended, during public health emergencies, the conduct of telephone interviews, by sampling, as a strategy to monitor adherence to NPI[34,35]. Report published by the Organization for Economic Co-operation and Development (OECD) on government evaluations of responses to COVID-19 revealed that preparation for the pandemic was insufficient, particularly in light of the significant human and financial costs[36]. This scenario reinforces that planning along with M&E is fundamental in global health crises, similar to the COVID-19 pandemic, in order to strengthen preparedness, readiness, and response capabilities within the health system regarding disasters and other public health emergencies. Moreover, M&E mechanisms should be in place to collect community feedback to better monitor public resilience and well-being protection.

Dimension - Learning from practices - In this field, the components of action qualification and meaningful learning in risk communication were emphasized to guide the adoption of strategies to reverse the morbidity and mortality scenario due to COVID-19, such as reducing contact among susceptible individuals, using masks, and cleaning potentially contaminated surfaces and hands[3,15].

The promotion of training on sanitary measures focused on reality and geographical challenges, facilitated understanding and adherence to the new behaviors necessary to face the pandemic. The main strategies in action qualification focused on health surveillance, laboratory support, health care, and management reinforcement, building immediate responses. In Mexico, projects on action qualification for risk communication were proposed, addressing various topics[37], aggregating consensually accepted evidence in the literature, and with transparent, timely, and easily understandable strategies for the population. In the face of the COVID-19 pandemic, cultural insensitivity to the experiences of racial and ethnic minority groups was considered an obstacle for

mitigation messages to have a broader impact. Although several studies have emphasized that the learning process should consider culturally and linguistically appropriate strategies, and that health professionals need to be better prepared, the COVID-19 pandemic revealed a pattern of insensitivity that was also evident in risk communication about Ebola[38]. The document reinforces the need for different actions for preparation and alert for possible future risks, as well as the dissemination of uncertainties, through different platforms, methods, and communication channels.

Monitoring and Evaluation Matrix - The TLM proved to be an important tool for visualizing the processes developed in the formulation and implementation of the Guide, identifying strengths and barriers to achieving the expected results. The configuration assisted in formulating a matrix encompassing evaluative questions to respond to whether the document effectively contributed to the production of knowledge about risk measures and whether the results of its formulation returned to the public and/or society. Other studies showed the importance of TLM, considering that new threats producing new diseases will continue to occur, as well as new disasters involving threats of natural origin[39].

► Context: What conditions, external variables, or 'moderators' can affect access to information, adherence, and maintenance of practices and behaviors as measures for controlling respiratory outbreaks? What political, economic, social, and organizational conditions limit the application of the NPI or access to it?

►Resources: Were the necessary resources for different audiences addressed? What resources were provided to enable the dissemination of safe and reliable information about the risk of COVID-19? Was there inclusion of information on decision-making to strengthen and/or relax disease mitigation strategies? Was there monitoring of the qualification of professionals to face the pandemic?

►Mechanism: What were the information dissemination strategies for reducing the risk of COVID-19? How did the population access non-pharmaceutical measures? What were the most adopted ways by the population to face the pandemic? Did society participate in the discussion and decision to resume activities?

►Outcome: Were the expected products by the OPAS Guide achieved? What barriers were identified by the population, health professionals, and community leaders for risk communication? What is the degree of implementation of the OPAS Guide? Were the monitoring indicators outlined? Will the evaluation contribute to answering questions about the implementation, performance, or impact of the intervention? What recommended measures produced unintended effects impacting health and quality of life? Did the document propose to monitor disparities and social determinants to understand how different populations participate and are affected by community mitigation strategies?

CONCLUSION

The response of documents formulated by international organizations helps to mitigate the social and health effects of outbreaks and pandemics through guidance on timely identification, prevention of infection transmission, guidance on the most effective treatment, and protection regarding resilience and the well-being of the population.

The availability of the PAHO Guide was essential to identify the extent to which this intervention was in a position to be submitted to an evaluation and to broaden the understanding of the non-pharmacological interventions recommended during the pandemic in order to encourage compliance with the recommended measures. In a scenario involving ambiguous and false information, in addition to generating negative consequences for the population, there are losses for adherence to the proposals, resulting in overload for the health system and encouraging the use of treatments without any scientific evidence.

It became clear that efficient risk communication cannot be achieved without strengthening governance, which requires increasing societal participation. Learning strategies that consider community networks have greater openness to culturally more grounded approaches. Moreover, complex problems, such as dealing with outbreaks and epidemics, need to include the construction of social protection proposals that help reduce the economic and social consequences arising from more austere measures.

There was concern in the document about the additional burden of vulnerability in the context of COVID-19, a key concept for understanding risk, especially in public health emergencies; however, the impact of this scenario on domestic violence, alcohol consumption, and mental health needs to be further explored in the face of other outbreaks and epidemics.

The intention of this research was not to assess the effectiveness of the document, but rather to answer whether the intervention was eligible for the evaluation process. The validated model allowed for the expansion of the range of intervention strategies and the identification of potentialities and challenges in the logical model and, ultimately, assisted in mapping the elements that could be disseminated as lessons to strengthen preparedness, readiness, and responses to disasters and other public health emergencies.

It is urgent to strengthen the triad of strong surveillance, efficient vaccination campaigns, and, above all, combat against *fake news*. If the formulation of policies using a logical model, coupled with a monitoring and evaluation matrix, is implemented, faster and more effective measures will likely be taken to respond to the scenario of new infectious diseases.

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Raquel Santos de Souza:	Conceptualization, Data curation, Investigation, Methodology, Writing – original draft, Writing – review & editing.
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