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COVID-19 contingency plan strategies and risk management

Gestão de risco e as estratégias do plano de contingência para COVID-19

Gestión de riesgos y estratégias del plan de contingencia para COVID-19

Pedro Ruiz Barbosa Nassar; Érica Brandão de Moraes; André Luiz de Souza Braga; Deise Ferreira de Souza; Bárbara Pompeu Christóvam; Mercedes Neto

ABSTRACT

Objective: to examine the contingency plan for human infection by Covid-19 and present a conceptual model of risk management for Covid-19. **Method:** in this executive evaluation study, the analysis followed the steps: policy description; problem diagnosis; policy design; implementation; governance; results and impacts; to establish an overall panorama of the National Human Infection Contingency Plan for the new Coronavirus. **Results:** the methodological steps were used to highlight the strengths and weaknesses of the contingency plan, and to construct a conceptual model of risk management for COVID-19. **Conclusion:** the scenario in Brazil, enhanced by unfavorable socio-environmental conditions, exposed how vulnerable its population and the health system are. The study also indicated that deficits in personnel, material and prior preparation for risk situations were factors to be addressed in the risk mitigation process.

Descriptors: Coronavirus Infections; Risk Management; Public Health; Public Health Policy.

RESUMO

Objetivo: analisar o plano de contingência para infecção humana pelo Covid-19 e apresentar um modelo conceitual de gestão de risco para o Covid-19. **Método:** estudo de avaliação executiva, com análise seguindo os passos: Descrição da política; diagnóstico do problema; desenho da política; implementação; governança; resultados e impactos; que permitiu estabelecer o panorama geral acerca do Plano de Contingência Nacional para Infecção Humana pelo novo Coronavírus. **Resultados:** foram utilizados os passos metodológicos para apontar pontos positivos e fragilidades do plano de contingência e a construção de um modelo conceitual sobre a gestão de risco para o COVID-19. **Conclusão:** o cenário nacional enriquecido de condições socioambientais desfavoráveis, expõe o quão é vulnerável a nossa população e o sistema de saúde. Além disso, o estudo apontou para déficits de pessoal, materiais e preparação prévia para situações de risco como fatores a serem tratados dentro do processo de mitigação dos riscos.

Descritores: Infecções por Coronavírus; Gestão de riscos; Saúde Pública; Políticas Públicas de Saúde.

RESUMEN

Objetivo: examinar el plan de contingencia para la infección humana por Covid-19 y presentar un modelo conceptual de gestión de riesgos para Covid-19. **Método:** en este estudio de evaluación ejecutiva, el análisis siguió los pasos: descripción de la política; diagnóstico de problemas; diseño de políticas; implementación; gobernancia; resultados e impactos; Establecer un panorama general del Plan Nacional de Contingencia de Infección Humana por el nuevo Coronavirus. **Resultados:** los pasos metodológicos se utilizaron para resaltar las fortalezas y debilidades del plan de contingencia y para construir un modelo conceptual de gestión de riesgos para COVID-19. **Conclusión:** el escenario en Brasil, potenciado por condiciones socioambientales desfavorables, expuso la vulnerabilidad de su población y el sistema de salud. El estudio también indicó que los déficits en personal, material y preparación previa para situaciones de riesgo fueron factores a ser abordados en el proceso de mitigación de riesgos.

Descriptores: Infecciones por Coronavirus; Gestión de Riesgos; Salud Pública; Políticas Públicas de Salud.

INTRODUCTION

One of the concerns of the 21st century regarding public health emergencies is related to the climatological events and the emergence of so-called emerging and reemerging diseases, which significantly contribute to morbidity and mortality in today's society. This fact is intensified by the world scenario of socio-environmental vulnerability, which directly increases the risk of impact on human health and on the economic systems[1,2].

It is noteworthy that emerging and reemerging diseases are those infectious diseases whose incidence in human beings has been increasing in recent years, with a relevant risk of increasing in the near future. Faced with these concerns, these types of diseases remain on the list of priorities of the Global Public Health Agenda, with alerts from the scientific community, in the development of research studies and reflections for the construction of knowledge[3].

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Within the risk scenario focused on situations that culminated in major impacts on human life and economic aspects, in the last hundred years a high number of deaths, from 40 to 50 million, has been witnessed, caused by pandemics and mostly by genetic disorders such as that of the Influenza (H1N1) virus, Ebola and, to a lesser extent, the Coronavirus. It is estimated that, annually, 290 to 650,000 people die due to complications arising from influenza syndromes[4].

Although it sounds like an unplanned scenario, according to the World Health Organization (WHO), a public health emergency is characterized as a situation that requires urgent measures to prevent, control and contain risks, damages and harm to human health. These situations can come from epidemics, natural disasters and lack of assistance to a specific group or population[2].

In December 2019, in Wuhan, China, the new Coronavirus (COVID-19) emerged causing an unusual viral pneumonia pandemic, which led the world community to declare a state of calamity/public health emergency[5-6]. Triggered by the world scenario, in January 2020, the Brazilian Public Health Emergency Operations Center was activated for the new Coronavirus (COE-nCoV). In the same month, the first suspected allochthonous case was reported, raising the level of global attention[7,8].

Among the plans necessary to face the pandemic, the Ministry of Health prepared the National Contingency Plan for Human Infection with the new Coronavirus in order to contain human infection and mitigate the appearance of serious cases and deaths caused by the new Coronavirus. This plan is made up of three response levels: Alert, Imminent Danger, and Public Health Emergency. Each level is based on the assessment of the risk of COVID-19 affecting Brazil and its impact on public health[9].

In the current pandemic scenario, there are still many difficulties in controlling and reducing morbidity and mortality due to the different manifestations of the Coronavirus, the difficulty in accessing the health system, the lack of effective drugs and the absence of vaccines, which are still in the testing phase, making it necessary to maintain actions aimed at Risk Management. Therefore, such actions include the following: planning actions to reduce the number of new cases, through social isolation and health education measures aimed at the population; creating public policies that ensure the life and safety of the population; encouraging managers and professionals to develop health care management actions, in line with international protocols, in order to ensure the protection of health workers and the implementation of safe and quality actions for the patients. The adoption of these strategies also aims at increasing the assistance capacity of the health system that supports the impact resulting from the pandemic[10].

However, considering that the population's illness and mortality involve not only the older adults and the chronically ill, said to be the highest risk group, but also the population of young adults; that there was considerable health impairment and loss of health professionals; and that there is a chronic process of ineffective public management, involving deficit of human capital, materials and poor management of public beds, this study focuses on the following questions: Is the policy outlined for coping with the coronavirus effective considering the number of new cases and increasing deaths in several states, or do they fluctuate between stability and increase? Does it serve the entire national territory, which has different contexts? Are the flaws in the planning, monitoring or execution? In the time it took to be executed, in disbelief of the risk of the public health problem?

In this context, this study aims to analyze the contingency plan for human infection by COVID-19 and to present a conceptual model of risk management for COVID-19.

THEORETICAL FRAMEWORK

Public policies must be understood as a set of measures, represented through programs, plans and goals, created by governments, aimed at guaranteeing access by the population to the rights established by law, such as assistance or service provision. These measures are an important part of public administration, since they represent the actions of governments created to better meet the needs of the citizens[11-13].

Risk is a collective phenomenon that affects a population. In public health, the concept of risk is applied in the identification of population groups that are different with respect to the probability of developing health-related events. This concept is used in planning and management, based on the identification of the groups with the greatest exposure to health risk factors[14].

In an attempt to fill in gaps on the theme, the development aspects and biases and challenges in the national context were adopted in this study. This approach assesses the current scenario and correlates with studies already available that deal with the theme of risk management in extreme situations.

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METHOD

The study approach was based on the executive assessment method, which allows establishing the general panorama about a certain public policy, corroborating for the identification of weaknesses and relevant points that need improvement in terms of management and/or execution[15].

This type of assessment consists of the sequencing of methodological actions, these actions being called “steps”. In this sense, the research had the following steps: description of the policy; diagnosis of the problem; policy design; implementation; governance; results; impacts; and proposals[15].

In this analysis, the corpus was built based on the researchers' knowledge of the relevant theme and pursuant to the National Contingency Plan for Human Infection with the new Coronavirus. Data collection and organization took place through ordinances No. 188 of February 3rd, 2020 and No. 356 of March 11th, 2020, in addition to the National Contingency Plan for Human Infection with the new Coronavirus, published in January 2020[16].

Based on the description of the policy as an instrument to be assessed, the national scenario and socio-environmental, economic and management challenges were correlated. This approach facilitates the analysis process as it allows for the intersection between the current pandemic scenario, the known and observed challenges, and the continuity in the methodological steps proposed. The approach made it possible to correlate with risk management, collaborating with the final proposal based on the assessment used.

In this sense, the steps were outlined as follows: Description of the policy - The contingency plan for COVID-19; diagnosis of the problem – observed setting; policy design – the management actions; Implementation - Analysis of consequences after the implementation of the policies; Governance - Social impact through the ability to govern; Results and impacts - Consequences of deficient management and weak governance; Proposals - Articulating risk management and the COVID-19 pandemic.

RESULTS

Description of the policy - The contingency plan for COVID-19

On January 30th, 2020, the General Director of the WHO declared the 2019 outbreak as a public health emergency of international concern. Temporary recommendations were issued to the Popular Republic of China and to other countries. To this end, a strategic preparedness and response plan for controlling and tackling COVID-19 was developed for countries already affected, but also to mitigate the impact of the outbreak in all countries.

The purpose of the contingency plan is to hierarchically organize the levels of decision-making and institutional responsibility, in addition to guiding all instances of rules and conducts. The strategic objectives to respond to the plan were the following: To limit human-to-human transmission, including reducing secondary infections between close contacts and medical assistance to workers, preventing transmission amplification events and further international spread from China; To identify, isolate and assist patients from the onset of symptoms, including providing optimized care for infected patients; To address crucial unknowns about the clinical severity, extent of transmission and infection, treatment options, and to accelerate the development of diagnostics, therapy and vaccines; To communicate critical information about risks and events to all communities and combat misinformation; and To minimize social and economic impact through multi-sector partnerships[9].

Diagnosis of the Problem – Observed setting

The second phase of diagnosis is an *ex post* correlation of policy design to discuss if it is still valid in the face of new contexts, that is, if the problem remains and if its causes are still those previously raised; what actually happened and still is happening in the national scenario of the new coronavirus pandemic, determining the need for a state of emergency in public health. However, 8 months after the onset of the pandemic, the data on infections and deaths exceed the initial expectations, as well as the duration of the pandemic.

In order to achieve these objectives, it would be necessary to rapidly establish international coordination to provide strategic, technical and operational support through existing mechanisms and partnerships; expand the countries' operational preparedness and response, including strengthening readiness to identify, diagnose and treat cases; prevent and control infections in health care settings; implement health measures for travelers; and increase awareness in the population, that is, informing the risk in order to increase community involvement. It would also be important to accelerate priority research and innovation to support a clear and transparent global process, development and equitable therapeutic availability, vaccines and diagnoses[17].

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Design of the Policy – The management actions

The analysis of the policy design considers, in general lines, three elements: logical model, existing incentives, and means of access to the policy. The model was based on the WHO recommendations, which based its response strategies on several premises; its transmissibility and the clinical spectrum of the disease would need regular updates to fill gaps in the knowledge of the disease and its potential for dissemination. Economic and social incentives were established; however, numerous problems were reported, such as: delay in the construction of field hospitals, lack of supplies, social programs that did not cover the entire vulnerable population in this scenario, and the omission by the Ministry of Health to make the data available, leading to the epidemiological thinking of underreporting cases, which creates uncertainty and distrust in the political, economic and social scenario[18].

With the spread of COVID-19 around the world in an escalated manner, in Brazil it was possible to observe the first behaviors of the virus in other countries in Asia and Europe, before its entry into the country. This opportunity allowed the Ministry of Health to elaborate preventive strategies for this confrontation that aimed, despite some uncertainties, to reduce as much as possible the number of symptomatic or asymptomatic infected people, avoiding a collapse in the public hospital network.

Implementation – Analysis of the consequences after policy implementation

Based on the above, in the fourth step of the assessment regarding implementation, it was possible to identify positive strategies regarding the recommended social isolation, the construction of temporary emergency environments (crisis offices, work groups, field hospitals, and the acquisition of materials and supplies). Over the months, it was possible to identify failure in processes and communication, using hierarchical verticalization at the political level for decision-making and non-compliance with protocols and recommendations.

Due to political clashes, the social vulnerability that is part of the daily lives of low-income communities, indigenous tribes, small cities in the country and with serious socio-economic problems, the isolation process was weakened, increasing the challenges that emerged with the pandemic, which weakens the fifth step, which is the analysis of governance in this scenario.

Governance – Social impact through the ability to govern

The government's strategy, which aims to help the underprivileged population, with the maintenance of social isolation, had unfavorable scenarios, such as: failure to contemplate part of the low-income population, frauds and distress due to exposure in long queues, as reported by the media, in addition to part of the isolation weakened by the speech of government officials, which has a direct implication on the economy, which will not bear for much longer and will unfold in an unprecedented financial crisis.

Results and impacts – Consequences of deficient management and weak governance

When analyzing the results and impacts, some points must be taken into account, such as: the impacts of failure to provide mass testing, resulting in underreporting and lack of clarity in the profile of the disease and how it behaves in the national scenario, which is multivariate. This failure can be verified in the numbers of reported cases, which by mid-August exceeded 3 million infected and more than 100 thousand deaths, which, in a way, does not demonstrate the reality of the Brazilian scenario[19].

Regarding the questions about budgetary spending, a window of weaknesses was observed inherent to the process of acquiring materials and supplies, fraudulent contracts and the non-operation of some field hospitals. The misuse of public funds for acquisition and overpriced contracts, as well as the misappropriation of funds, has a negative impact both on the political level and on the quality of the health care provided to the population.

Proposals – Articulating risk management and the COVID-19 pandemic

Data analysis was conducted in a descriptive and analytical manner, based on executive evaluation. Studies on health risk management were used, enabling the interpretation of the current scenario and possible inferences in the scope of health management. As a research technique, the analysis enabled the construction of valid and reproducible inferences according to its specificity[20].

In this analysis, a correlation was built from the list of public health policies and health risk management, as instruments for the management and decision-making process. These are relevant topics within the current health and pandemic context.

The course of a pandemic such as the current one is permeated with uncertainties that must be periodically reassessed as new discoveries in science are disclosed. Recently, 4 uncertainties were noted about COVID-19, which impact on the management of the associated risks. The first uncertainty is related to the lethality rate of the disease. For it to be calculated accurately, information is needed on the number of people infected. Most countries did not

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conduct large-scale tests and, in addition, there are registered deaths without defined causality for COVID-19. Thus, there can be underestimated or overestimated numbers for this variable[21].

The second uncertainty is about the period of transmission of the disease, before the first symptoms. Considering a mean incubation time of 5 to 6 days, managers face the challenge of how to contain the transmission, in the period when it is still asymptomatic. The third uncertainty reflects the second and involves the number of asymptomatic cases of the disease. Based on the assumption that 80% of the cases do not develop symptoms, measures of social isolation and lockdown can promote a reduction in dissemination, but with great economic and social impact. Finally, the fourth uncertainty that permeates decision-making concerns the duration of the infection and the risk of post-quarantine transmission[21].

As measures to manage risks, the combination of containment and mitigation activities has been used in order to avoid the peak of the epidemic and overload of the health system for a prolonged period, to protect vulnerable populations, as well as to reduce morbidity and mortality. Managerial actions to achieve these objectives have varied and must be weighed based on the risk and assessment of the national context. Brazil is currently experiencing the COVID-19 pandemic and recklessly propagated information and induced behaviors that go against the WHO recommendations, which are based on results obtained in other countries and recent scientific research studies[22].

Assessing the internal context is a fundamental stage in the risk management system to determine targeted actions. It is important to highlight peculiarities in the population characteristics of Brazil, as it is a country whose population consists mainly of young adults. However, there is a high prevalence of comorbidities related to the escalation of COVID-19 cases, such as hypertension, diabetes, obesity, and tuberculosis, among others. In this sense, the focus from the current pandemic in Brazil needs to be directed to the most vulnerable populations with regard to the preparation for new scenarios like this[22].

The increase in the offer of beds and the management of overcrowding in the health services is another measure that should be implemented. This implies greater availability of ICU beds and the acquisition of equipment on an emergency basis. In some scenarios, those were shown to be weakened by the lack of prior planning, agility in decision-making and fraudulent and ineffective public management[21].

The promotion of public health measures, with reinforcement in the education of health professionals, in the prevention and control of COVID-19 infection, was fundamental. In addition, a large part of the population received guidelines on what preventive measures to take and about each exposure situation, as well as how to provide home isolation for mild cases. This is still a challenge, considering the different housing realities within the national scenario[21].

Proposals of a Risk Management Model in public health emergencies: COVID-19

In this sense, due to the weaknesses and challenges regarding the management of health care in emergency situations in public health, some peculiarities are being observed, such as: failure to provide mass testing, which certainly weakens the epidemiological data for decision making; deficit in intensive care hospital beds, leading to an increase in waiting for hospitalization, collapse of the health system and an increase in the number of deaths; scarcity of material, caused by global demand; deficit of qualified human capital, a problem that already exists in the public health system, which, corroborated by the thousands of absences of infected professionals, further impact on quality of care.

Therefore, as a proposal to promote good management practices in calamity situations, the conceptual scheme adapted from the study by Nassar (2017) and Nassar and Porto (2019) is presented as an example, as a possibility to guide the management sub-processes in this scenario. These subprocesses are the analysis of the environment, be it internal: In-hospital (bed capacity and possible adjustments), Primary Health Care – PHC (structures and flows), or external (socio-environmental conditions and field hospitals); Management of direct care (care for infected and suspected patients and communities by PHC, handling of corpses) and indirect care (supplies, epidemiological health surveillance service, equipment technology and analysis of specific exams and continuing education to train professionals); Planning and organization (central and regional level with crisis offices and operations center, institutional work groups and development of direct and indirect management processes).

It is necessary to elaborate administrative instruments, such as: manuals and protocols for clinical management, patient and professional safety, updated epidemiological bulletins; the cultural aspects involve collective behavior and vulnerability that directly impact on the reduction of the curve of infected individuals and exposure to the pathological agent, organizational culture of health institutions, which directly dictate how much a particular institution can adapt to the new scenario; and finally the body, which, in the pathophysiological conception, determines the cases to be followed-up by the basic health network, at home or in the hospital environment, as well as in the psychological aspects in facing situations of fear, panic and anguish, caused by uncertainties and social isolation.

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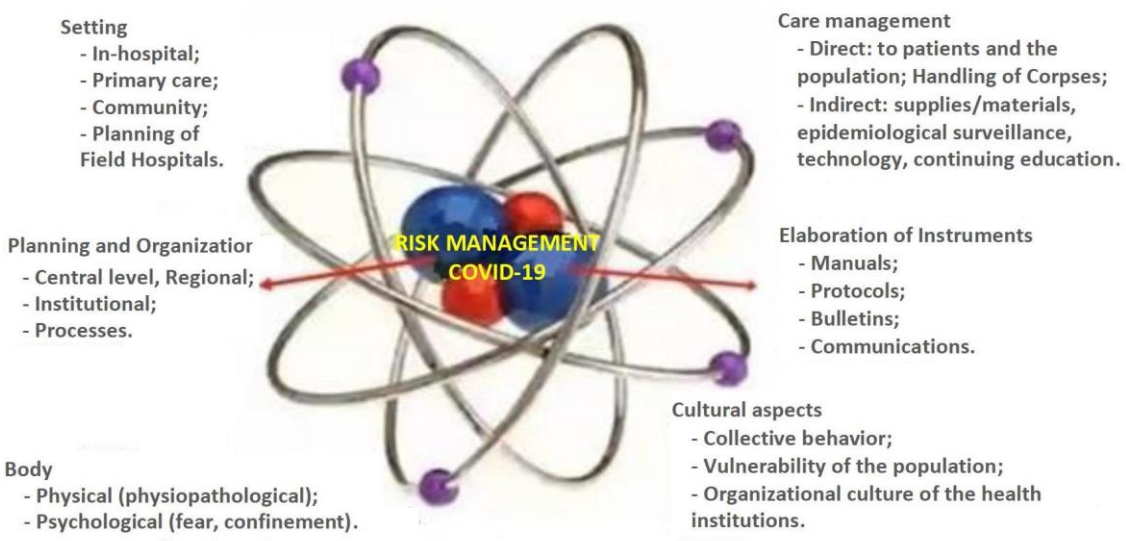
Given the above, the conceptual scheme (Figure 1) of risk management is presented to be applied in extreme situations such as that experienced in the pandemic of the new Coronavirus.



Source: Adapted from Nassar (2017) and Nassar and Porto (2019).
FIGURE 1: Conceptual scheme for COVID-19 Risk Management. Niterói, RJ, Brazil, 2020.

CONCLUSION

This study enabled the analysis of the National Contingency Plan for Human Infection with the new Coronavirus, which pointed to some weaknesses in the scope of risk management in this scenario. The national scenario covered with unfavorable socio-environmental conditions exposes how vulnerable the Brazilian population and the health system are.

The management processes, from the central levels to the scope of health institutions, indicate deficits in personnel, materials and prior preparation for risk situations. These challenges lead to the reflection of the current need to prepare for events of public calamity and emergency in public health. Management models inserted in this context are extremely relevant.

To this end, the commitment of managers, employees and the population to the implementation of public policies and in guiding strategies such as the contingency plan becomes essential so that the country can fight the pandemic with acceptable levels of morbidity and mortality and avoid overload in the health services. Thus, making the efficiency of actions for the health of the Brazilian population viable.

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