DOI: 10.1590/1413-81232023286.11272022EN

Disaster risk reduction, the Sustainable Goals agenda and the principles of the SUS, in the context of the COVID-19 pandemic

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Abstract *The aim of this study was to analyze the connections between the Sendai Framework for Disaster Risk Reduction, the Sustainable Development Goals (SDGs), and the principles of Brazil's Unified Health System (SUS) in the context of the public health emergency caused by the COVID-19 pandemic and its potential implications for population health. This qualitative, cross-sectional, exploratory study collected data from health professionals with experience in emergency and disaster risk management and treatment practices, which were then processed using the Iramuteq software for lexical analysis. The textual corpus was presented through a descending hierarchical classification that resulted in seven classes grouped into three categories: disaster response in the context of SUS; prevention of future disaster risks; and preparedness and recovery actions based on the Sendai Framework and the SDGs. The study highlighted aspects related to the direct and indirect effects of the COVID-19 pandemic and the challenges related to disaster risk reduction as advocated by the Sendai Framework, emphasizing the need to strengthen the culture of safety and sustainability within the SUS, which aligns with the ODS and social determinants of health.*

Key words *Disaster stages, Unified Health System, Public Health, Sustainable development, COVID-19*

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Introduction

The National Policy for Health Surveillance defines "public health emergency" (ESP) as a situation that requires urgent implementation of measures for prevention, control, and containment of risks, harms, and public health damages, which applies to the contemporary example of the COVID-19 pandemic[1]. In the Brazilian Classification and Coding of Disasters (COBRADE), this pandemic can also be classified as a natural disaster of biological typology[2], given that a disaster is characterized as an event that combines natural and/or technological threats, exposure, conditions of vulnerability, and insufficient response capacity[3].

In the Brazilian context, disasters are made worse by social determinants and health inequities, which pose greater risks for impoverished families and groups. Consequently, significant effects are often observed in the fields of health, social welfare, economics, politics, and culture. This underscores the need for the scientific community to develop better standards for prevention, preparedness, response, and recovery in the face of such events[4-7].

With respect to vulnerability as a central concept for understanding emergency and disaster phenomena, COVID-19 demonstrated certain specificities due to its syndemic characteristics. This "syndemic", a neologism formed from the combination of the words "synergy" and "epidemic"[8], was conceived by Merrill Singer in the 1990s, and demonstrates the synergistic interaction of distinct diseases in specific populations. On the one hand, there is an infectious disease that causes severe acute respiratory syndrome, and on the other hand, a series of non-communicable diseases whose effects are magnified by the addition of social and economic disparities in the population[9]. This situation has made the COVID-19 pandemic an atypical and complex disaster, which demands future alignment of international frameworks and agendas and collective scientific efforts to adopt better risk management measures for new pandemics.

An emblematic example is the Sendai Framework for Disaster Risk Reduction 2015-2030, adopted at the 3rd World Conference on Disaster Risk Reduction held in Hyogo (Japan) in March 2015. At this occasion, the commitment of States to reduce potential disaster risks and increase resilience was restated in the context of eradicating poverty, a motto for sustainable development. It is known that women, children, the elderly, and people in vulnerable situations are disproportionately affected in these situations, making it necessary to reduce exposure to threats to prevent the development of new risks and to obtain accountability systems at all levels[5]. Effective disaster risk reduction management is a cost-effective investment in preventing future losses and contributing to sustainable development. This Framework continued the Hyogo Framework for Action 2005-2015, aiming to assess, review and identify gaps, lessons learned, and future challenges[5].

Furthermore, in September 2015, the 193 member countries of the United Nations approved the 2030 agenda and the Sustainable Development Goals (SDGs), aiming to enhance global development and improve people's quality of life through 17 objectives with 169 targets to be achieved through joint local, national, and international actions by all levels of government, organizations, companies, and society. The agenda pointed out five areas of importance, known as the "5 Ps": People, Planet, Prosperity, Peace, and Partnership. With the purpose of "leaving no one behind", the Sustainable Health Agenda for the Americas 2018-2030 represents the health sector's response to its member countries' commitments. Among the 17 objectives, objectives 1 and 3 are particularly highlighted, although all others are equally relevant. Objective 1 aims to "end poverty in all its forms everywhere", while Objective 3 aims to "ensure healthy lives and promote well-being for all at all ages". The latter has target 3.3: to end, by 2030, "AIDS, tuberculosis, malaria, and neglected tropical diseases, and combat hepatitis, waterborne diseases, and other communicable diseases"[6], a segment where COVID-19 is included.

On the other hand, the Unified Health System (SUS), which is the legal institution that organizes health actions and services in Brazil, created by the 1988 Constitution[10], is structured in a decentralized way, with comprehensive care, prioritizing preventive activities and society participation. SUS also performs epidemiological surveillance actions, participates in the training of human resources, formulates policies, executes basic sanitation actions, and promotes scientific and technological development in its area of activity, among other constitutional attributions[11]. The SUS operates with doctrinal principles: universality, equity, and comprehensiveness; and with operational principles: decentralization, regionalization, hierarchy, and social participation[12].

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This system plays a strategic role in the daily life of the population, including emergencies and disasters, situations in which health determinants and conditions end up worsening the operational and logistical difficulties of responding to such events, such as those related to food, housing, urbanization, basic sanitation, environment, work, income, education, transportation, leisure, and access to essential goods and services[7,13].

In emergencies and disasters, the SUS requires strategic planning, interaction, dialogue, and coordination of the care network and its different levels and actors. Three measures are considered strategic for this purpose: the establishment of a situation room, articulation and interaction of actors and sectors, and an emergency strategic plan, aiming to ensure health care for the population with greater safety and effectiveness[14]. Currently, government entities have been constantly demanded regarding risk management in the face of these events, which have been determining significant rates of morbidity and mortality, as well as environmental and societal impacts. Better preparation interferes with reducing the effects of these emergencies in the context of public health, and timely and effective response necessarily involves the integration of the three levels of management – Federal, State, and Municipal – of the SUS[15].

The management of disaster risk in its different phases (prevention/mitigation, preparedness, response, recovery) is anchored in distinct fields of expertise and action, both internally at different levels and externally through international articulation and agreements[3]. This involves administrative, organizational, and operational decision-making, both governmental and non-governmental, in conjunction with society, with a view to public policies and strategies that can lead to impact reduction[15]. The collection of these actions, being a dynamic and continuous planning process, is represented by the disaster cycle (Figure 1).

Within the development of a disaster risk management based on processes, health practices should be constructed in a transversal manner, scrutinizing social and economic determinants, in order to achieve equitable access for all citizens without fragmenting attention, which sometimes occurs in public health emergencies and disasters in the country[16]. Therefore, seeking alignment with the existing instruments for the systematization of actions to address such events is timely and urgent. At the international level, the Sendai Framework for Disaster Risk Reduction and the Sustainable Development Goals stand out, while at the national level, the SUS is responsible for the complex task of organizing the health sector's response to such situations, as in the case of the COVID-19 pandemic.

Thus, this study aims to analyze the connections between the Sendai Framework for Disaster Risk Reduction, the Sustainable Development Goals, and the principles of the SUS, in the context of the public health emergency of the COVID-19 pandemic, and their potential implications for population health.

Methodology

This is a qualitative, cross-sectional, exploratory study, whose data were collected in the first semester of 2021 from healthcare professionals enrolled in the elective course "Seminar on Emerging Themes of Professional Practice: emphasis on Health in Emergencies and Disasters (risk management in the face of COVID-19)" from the Graduate Program *Stricto Sensu* of the Anna Nery School of Nursing (EEAN), Federal University of Rio de Janeiro. The study was approved by the ethics and research committee (Resolution No. 3.653.634; CAE: 18207019.0.0000.5238). Data collection was conducted by members of the Health in Emergencies and Disasters Teaching, Research, and Extension Group (GEPESED), through forms applied to the 16 professionals enrolled in the course, who had experience in emergency and disaster risk management and assistance.

A portion of the course was delivered online under the title "Lessons Learned from Disasters: The Case of COVID-19" and is available on the GEPESED-UFRJ YouTube channel[17].

The textual data obtained from complementary activities carried out so as to achieve the stated objective were processed using Iramuteq®. This is a free software licensed under GNU GPL (v2), which is anchored in *R* software for statistical calculations[18], and uses the Python[19] language as an interface for multidimensional analyses of texts and questionnaires. The name of the software comes from the French phrase *Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires*[20].

The use of this computational technology allowed for greater methodological rigor and increased credibility in textual analysis, by integrating statistical analyses, graphs, and visual elements, thereby advancing beyond a mere analysis of discourse[21].

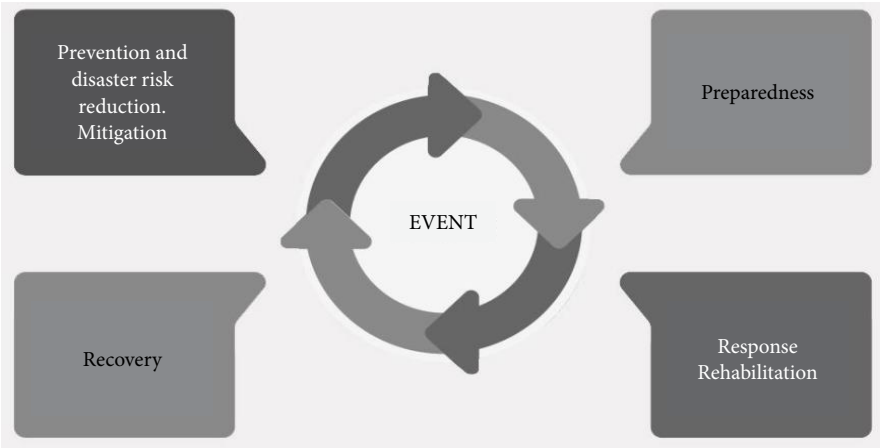

Figure 1. Cycle of disasters.

Source: Authors, 2022.

For lexical analysis, the resultant content from the discursiveness of the 16 professionals constituted the *corpus,* where each participant was encoded by the letter "E" followed by a sequential number (E_1 to E_16). The *corpus* was compressed into a single file saved as a text document, using the Unicode Transformation Format 8-bit code units (UTF-8). Acronyms were standardized, such as Disaster Risk Reduction for DRR and Intensive Care Unit for ICU. Separated words that together have the meaning of a single term were joined using a subscript hyphen, such as post_disaster and mechanical_ventilator, in order to ensure greater utilization of the text[20].

Results

The textual *corpus* processed by the software was reconfigured into text segments, which underwent lexical analysis resulting in tables listing the vocabulary. This methodological operation resulted in the Descending Hierarchical Classification (DHC), where text segments were classified by their vocabulary, and their set partitioned according to the frequency of lemmatized forms in segments with a size of three lines generated according to the size of the *corpus*. After statistical analysis, in the program's summary tab and *rapport* report, it was observed that the *corpus* was processed in 22 seconds, and that all 16 texts were processed, which is important for validating the analysis performed[21]. A total of 328 text segments, 11,927 occurrences, 1,782 forms, and 810 hapax or forms with a single incidence were obtained. With the frequency of active forms ≥3: 566, divided into seven classes with 296 classified segments, a utilization rate of 90.24% was obtained. A retention rate of at least 75% of text segments is considered a good utilization rate for DHC analysis[22].

Once the classification was performed by the Reinert method and the option for simple DHC was chosen, each text segment was analyzed according to the vocabulary contained therein. The *corpus* was composed of seven classes formed after six partitions, as shown in Figure 2. The first partition divided the corpus into two thematic sets, A and B, represented by the dendrogram of the classes, which includes the demonstration of the association between them. The thematic set A, after the second partition, separates classes 3 and 7. The thematic set B, with the third partition, separates classes 1 and 2 from classes 4, 5, and 6. The fourth partition separates classes 4 and 5 from class 6, while the fifth partition separates classes 4 and 5. The sixth partition separates classes 1 and 2.

Figure 3 illustrates the graphic representation of the similarity analysis of the textual database structure of the *corpus*, by illustrating words and their close or distant connections to each other,

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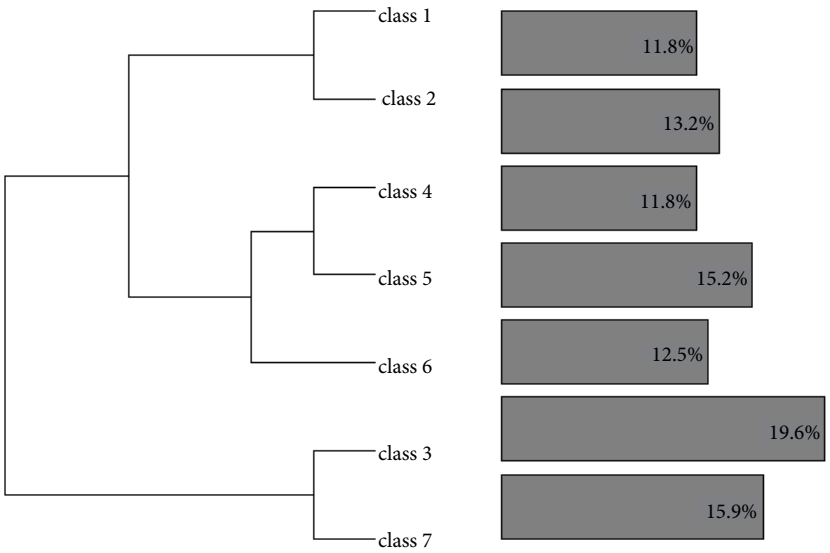

Figure 2. Dendrogram of classes.

Source: Data from the 2021 tasks, worked on by the Iramuteq software.

emphasizing and establishing links between lexicons related to health, action, disaster, risk, and development.

The dendrogram represented in Figure 4 demonstrates the most frequent words in the *corpus*, with the initial context unit (ICU) represented by each textual construction of the 16 professionals, giving rise to elementary context units or text segments of each class, where the vocabulary of each class is similar to each other and different from the vocabulary of the other classes. The weight of the texts in each class and the associative strength between the words and their classes are analyzed when the chi-squared test is greater than 3.84, representing $p<0.0001$. Thus, the lower the value of the chi-squared, the lower the relationship between the variables[20]. Class 1 corresponds to 11.82% with 52 forms and three predominant texts E_16, E_13 and E_09; Class 2 corresponds to 13.18% with 62 forms and two predominant texts E_15 and E_12; Class 3 corresponds to 23.29%, with 65 forms and two predominant texts E_08 and E_03; Class 4 corresponds to 11.82%, with 48 forms and three predominant texts E_02, E_04 and E_11; Class 5 corresponds to 15.2%, with 57 forms and two predominant texts E_15 and E_01; Class 6 corresponds to 12.5%, with 42 forms and two predominant texts E_15 and E_01; and Class 7 corresponds to 15.88%, with 65 forms and three predominant texts E_06, E_09 and E_10. All the predominant texts have $p<0.05$ and $x^2>3.80$.

The following are the classes defined by CHD, which were structured by categories based on the content of text segments and word frequency, taking into consideration the disaster risk management processes.

Disaster Response in the Context of SUS

The predominant classes in this category are 3, 6, and 7, with textual content constructed through the discursiveness of professionals E_03 and E_08 in class 3, E_01, E_15, and E_06 in class 6, and E_09 and E_10 in class 7. These classes are more related to assistive response actions, and therefore, to activities of health and SUS. Class 3 contains words such as Public Health Emergency of National Interest (ESPIN), pandemic, event, interventions, health, and coping, which are more closely related to assistive management and decision-making, involving the idea of a situation room or a minimally decision-making environment. Class 6 contains words that align more with SUS-related activities, such as principle, comprehensiveness, preventive, right, universal, need, resource, equity, region, in text segments that accurately report a character of planning and

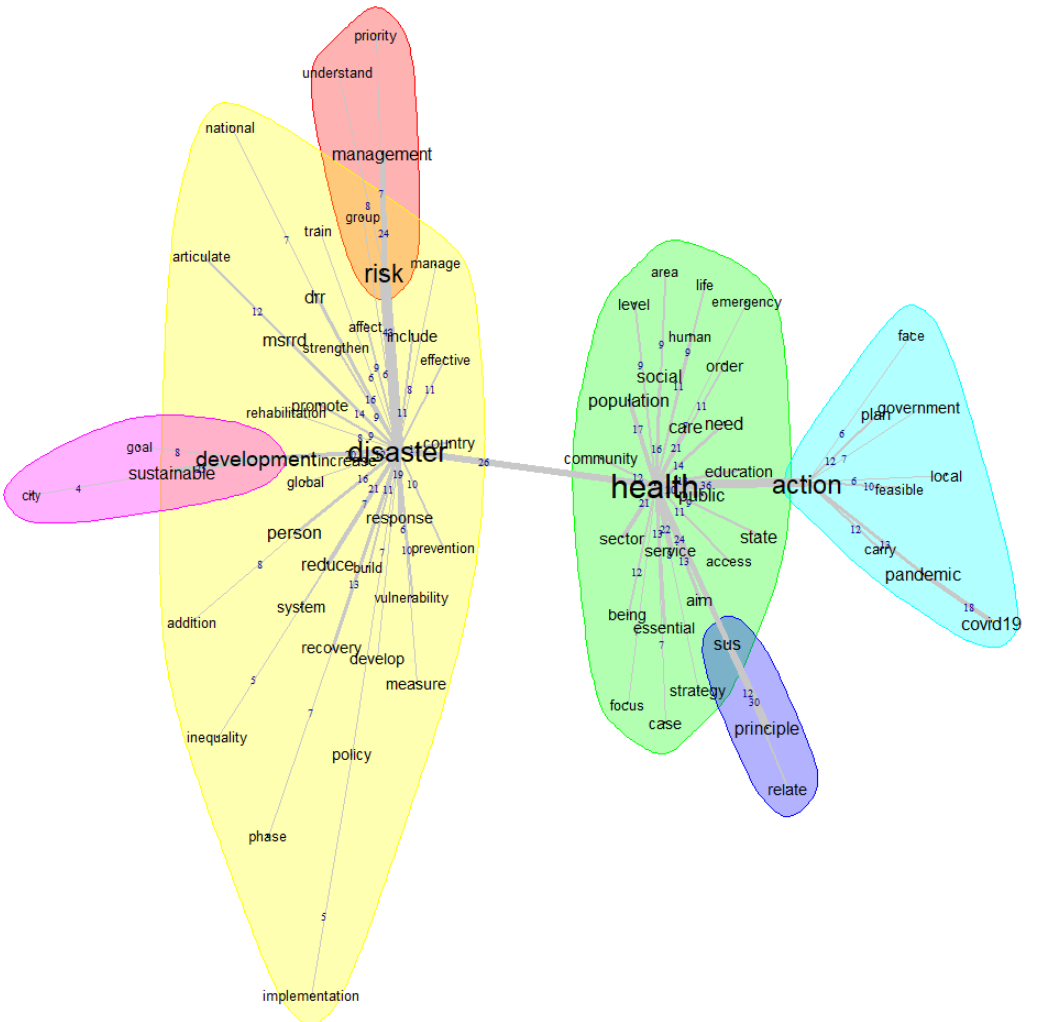

Figure 3. Similarity analysis.

Source: Data from the 2021 tasks, worked on by the Iramuteq software

health policies, precisely because it is more related to emergency and disaster response, and thus to the organization of necessary arrangements for assistive performance, including the resources pertinent to the undertaking of health practices. Class 7, on the other hand, is more related to assistive response, with interventions at the forefront, with words such as case, ICU, mask, bed, vaccination, therapy, infected, which place emphasis on health care and surveillance, as well as provide elements for decision-making regarding assistive practices directly to individuals, but which do not necessarily concern only frontline operators.

[…] From the perspective of risk management actions focused on the health sector, both the Sendai Framework and the SDGs are unanimous in their call for intersectoral, interdisciplinary, and cross-cutting actions involving various public and private entities. One absolutely necessary action is to raise awareness among policymakers to make disaster and public health emergency response a public policy, in other words, a government policy. Without this, no health action will be feasible in the short, medium, and long term. The health sector cannot respond alone, nor can it structure itself independently to address all the necessary actions to confront disasters. However, this does not justify

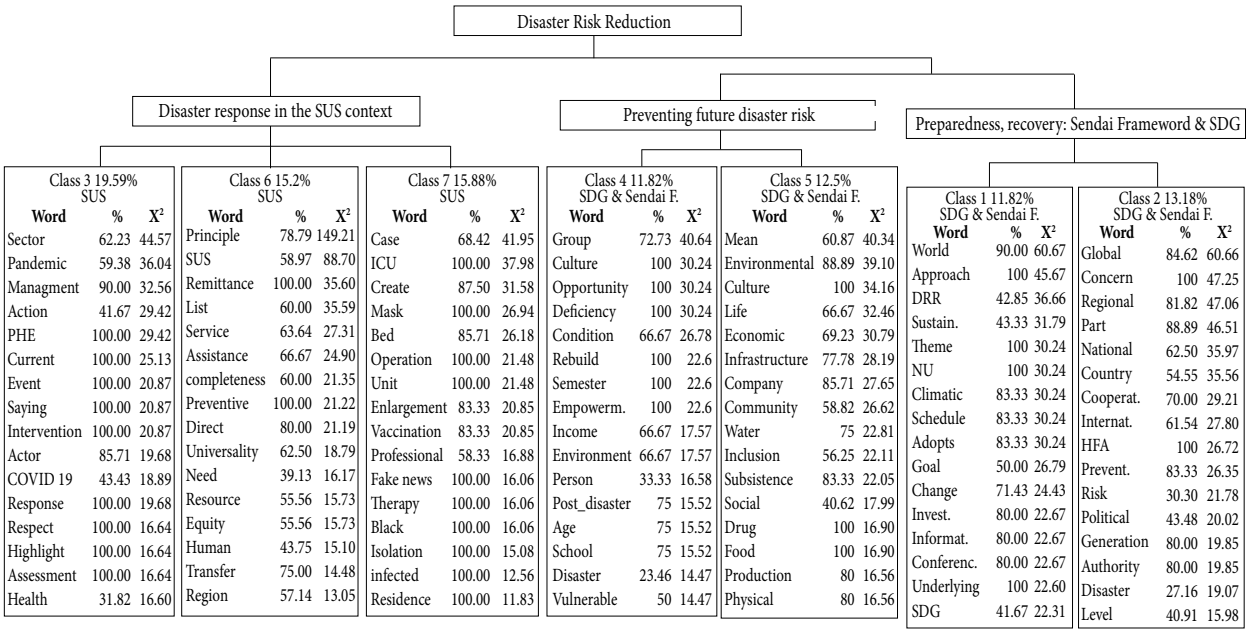

Figure 4. Descending Hierarchical Classification.

Source: Authors, data from the tasks of the 16 professionals, worked on by the Iramuteq software.

the health sector distancing itself from its interdisciplinary and cross-cutting responsibility with all other actors in the response. (E_08).

It is necessary to strengthen surveillance and integrate it with Primary Health Care, with the aim of establishing control and care measures, such as: expanding testing capacity […]; increasing the capacity for clinical care, hospital beds, and ICU beds for COVID-19 […]; and accelerating coordinated actions by the SUS National Immunization Program to vaccinate all eligible population segments. (E_10).

[...] The principle of comprehensiveness in the Brazilian Unified Health System (SUS) refers to a commitment to fully meet the entire life cycle of human beings[...]. On the other hand, the principle of equity highlights the need for mass [...] testing. The most affected areas should receive differentiated care [...]. Given this scenario, it is necessary to have human, material, and financial resources to develop actions for the care, hospitalization, and rehabilitation of the population. (E_01).

Preventing future disaster risks

Classes 4 and 5 are predominant in this category, along with textual contents related to professionals E_02, E_04, and E_11 in class 4, and E_05 and E_13 in class 5, and are specifically related to prevention/mitigation actions. Class 4 words that stand out include: group, culture, opportunity, disability, rebuild, environment, post-impact, vulnerable, disaster, while class 5 words include: environmental, culture, infrastructure, economic, company, subsistence, social, food. The content of these class text segments aligns with the issues outlined in the Sustainable Development Goals and targets, as well as the principles of disaster risk reduction in the Sendai Framework:

[...] To prevent disasters, it is necessary to develop digital platforms with local disaster alerts, as well as establish support networks for people with high social vulnerability. Professional training should be provided for those who have lost their jobs due to disaster impacts, along with psychological support [...]. Empowerment campaigns should be implemented to encourage women to participate in disaster risk reduction plans and programs. (E_02).

[...] Actions aimed at disaster risk factors are important, such as the consequences of poverty and inequality, climate change and variability, rapid and unplanned urbanization, poor land management, demographic changes, weak institutional ar-

rangements, policies that are not informed about risks, lack of regulation and incentives for private investment in disaster risk reduction, complex supply chains, limited availability of technologies, unsustainable use of natural resources, declining ecosystems, and the emergence of epidemics and pandemics. [...] The development of mechanisms and actions for prevention and planning for disaster risk reduction aims to protect people, communities, and countries, as well as their livelihoods, health, and cultural heritage, in a more effective manner. (E_04).

[...] Knowledge of risk areas, vulnerable groups, and the health sector's response capacity, as well as their spatial distribution, is essential for planning health actions in cases of disasters and throughout all phases - before, during, and after the event. [...] In addition to indicators that reveal socioeconomically vulnerable populations, other factors related to biological and social conditions, such as those related to children, adolescents, women, the elderly, chronic patients, or people with special needs, are also important. [...] Therefore, when developing a risk management action plan for the health sector, it is crucial to consider the vulnerabilities of the plan's scope. (E_11).

Preparation and recovery actions based on the Sendai Framework and the SDGs

This category is mainly composed of classes 1 and 2, with the most expressive textual content related to professionals E_09, E_13, and E_16 in class 1, and E_12 and E_15 in class 2, who are more closely related to preparation and recovery actions. In class 1, words such as global, disaster risk reduction, addressing, sustainable, goal, climate, United Nations (UN), investment, and SDGs were highlighted. In class 2, there are words such as global, regional, national, Hyogo Framework for Action (HFA), prevention, risk, cooperation, international, political, disaster, and authority, which are more closely aligned with the aspects highlighted in the Sustainable Development Goals and the Sendai Framework.

[...] The Sendai Framework is the main instrument for managing disaster risks on a global scale. [...] Its goal is to make the world a safer place and to reduce the risk of both natural and human-made disasters. Building strong institutions, laws, and budgets to ensure efficient disaster risk management is a priority that can be reinforced by the Sustainable Development Goal of promoting sustained and inclusive economic growth, full and productive employment, and decent work for all. (E_09).

[...] The eradication of poverty, as envisaged by the SDGs, is closely related to the Sendai Framework. Each state has a fundamental responsibility to prevent and reduce disaster risks. [...] This also requires accessible and non-discriminatory empowerment and inclusive participation, with special attention to people disproportionately affected by disasters, especially the poorest. (E_15).

[...] The Sendai Framework presents some goals and priorities that are interconnected with the SDGs and the principles of the Unified Health System (SUS). One of them is Priority 3, which addresses the need to invest in disaster risk reduction (DRR) for resilience. [...] This priority specifically refers [...] to the increase of resilience of national health systems, promoting the integration of disaster risk management in a cross-cutting manner across all levels of care. (E_16).

Discussion

Despite the segmentation of textual content into classes, the context forms an articulating set of the three considered documentary bases, delimiting the synergistic nature that they delineate with respect to population health, especially in emergency and disaster situations. In a way, this reinforces the necessary interdisciplinarity, transdisciplinarity, and intersectoriality when such phenomena are addressed, which also emphasizes their complexity.

A relevant aspect for the discussion about the topics is the ongoing debate and controversy around the concept of disasters[23], with its technical definition still unconnected from the sociological debates about them[24,25], which generally treat disasters as events that originate from human action[26]. This change in judgment about the nature of disasters is important for society, as it pertains to the social generation of events that were previously considered external and alien to it[27]. In the horizon of social sciences, the processes that unfold in disasters are a temporal construct operated within social systems, which, by making social groups vulnerable during disasters, interferes with the sufficiency of response and rehabilitation. Additionally, the effects of disasters on already burdened health systems further weaken their ability to respond upstream[28]. Given the social nature of disasters, society and governments need to be aligned in order to jointly build political and economic foundations that allow for the achievement of the SDGs and the RRD, based on the foundation of SUS and the

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principle of equity, which is present in both the SDGs and the Sendai Framework. Indeed, the construction of the framework for the culture of safety and sustainable development should not originate from governments, but rather from society, in order to then be expressed in governments, understanding that the government serves society and not the other way around.

Although COVID-19 has certain characteristics of Beck's Smog[29], "Hunger is hierarchical, Smog is democratic"(p.43), it impacts the poor more than the rich, since risks, as well as wealth, are distributed in class systems[29](p.41). In fact, industries where production risks are high are transferred to poor countries that accept them, which is reiterated in Beck's expression[29]: "the devil of hunger is fought with the Beelzebub risk potentiation"(p.51). Although the rich have more to lose than the poor, hunger affects the latter more[30](p.84).

It is precisely because it was designed for everyone and has a function in public health, with equity, universal and equal access, and also collaborates with environmental protection, that the SUS can be considered, beyond the field of health, as an inducer of social organization, allowing the rich and poor to not be separated and fighting hunger, as well as promoting citizenship, without the risks being potentiated. This understanding is linked to the Sendai Framework in such a way that by effectively managing disaster risk, sustainable development is also contributed. Prevention and planning applied to disaster risk reduction actions protect people, communities, countries, health, ecosystems, and socio-economic-cultural heritage, thereby increasing resilience[5]. These tasks fall within the competence of the Sendai Framework, the SDGs, and the SUS.

The Sendai Framework highlights the need for special attention to be given to the limited availability of technology, the irresponsible use of finite natural resources, and epidemics and pandemics. This is consistent with the responsibilities of the Brazilian Unified Health System (SUS), which include promoting scientific and technological development, organizing epidemiological surveillance actions, participating in the development and execution of policies and measures for basic sanitation, as well as collaborating with environmental protection efforts and the Sustainable Development Goals (SDGs) related to combating hunger, promoting sustainable agriculture, and improving health and well-being.

An additional challenge is the deepening of inequalities that the COVID-19 pandemic has brought to populations, especially in areas with the greatest social disparities, highlighting the fragilities in achieving sustainable development as outlined in the United Nations 2030 Agenda. In Brazil, the pandemic has brought to light issues related to access to social protection networks, public health services, employment, income, transportation, and housing. The pandemic has also brought to the fore other more powerful inequalities, however, the recovery prompted by this disaster brings a unique opportunity to rethink society with a focus on human rights and a better future for all, with fewer risks[31]. The direct and indirect effects of the COVID-19 pandemic in Latin America have impacted all areas of human life, paralyzing the economy and leading to profound social changes, which have brought uncertainties. The inequalities are unsustainable and deep, and require equal and sustainable reconstruction, "aiming at creating a true welfare state, a long overdue task in the region"[32].

Social inequalities lead to asymmetry in access to available care technologies, asymmetries that exist in all countries, regardless of their level of development, including gender, social and economic status, race, and ethnicity[33]. In Brazil, neoliberal policies exacerbate the impacts of the pandemic[34]. Neoliberalism and individualism place the weight of responsibility for what happens on individuals rather than the social system[35]. However, in the world of decision-making, multiple individuals are making decisions at the same time, but not all individuals are necessarily decision-makers, and thus, affected individuals emerge, those who do not participate in the decisions, i.e., deciding is the opposite of being affected. "The affected individual suffers the threats of what they have no power to control"[30](p.84-90).

According to Giddens[35], "risk is not an individual issue; there are risks, such as ecological disasters and nuclear wars, that create risk environments that affect a large number of individuals"[35](p.46). Furthermore, due to social inequalities, health inequalities are also intertwined with them, making it strategic to develop actions related to social issues, which require coordinated interventions on various aspects of social life. This implies multilateral government actions, which are not simple in technical and political terms. When social inequalities are overcome by political initiatives, the concept of "health in all policies" arises, where health is incorporated into the management actions of different political sectors[34]. All these issues related to social inequalities have a different impact on symmetry,

intensity, and depth, where the precepts of the Sendai Framework, the SDGs, and the SUS are applicable.

Concluding remarks

The analyzed texts highlighted aspects regarding the direct and indirect effects of the COVID-19 pandemic, concerning the challenges of disaster risk reduction, the urgency of implementing what the Sendai Framework lists in terms of objectives, goals, and governance efforts, recognizing that sustainable development also comes from effective disaster risk management[31]. Additionally, the Unified Health System (SUS) plays a fundamental role in all actions by working with inclusive and egalitarian principles and with health in the context of its social determinants.

The COVID-19 pandemic and its social, economic, and structural implications are embedded in the context of social inequalities and, consequently, social determinants of health. The main challenge is to learn from it and try to better respond to future biological disasters and public health emergencies within the scope of the SUS. Public authorities and policymakers must recognize that disaster risk reduction strategies are only effective when worked on by distinct capabilities, such as: political skills, construction and adoption of specific regulations and legislation, social participation of different actors, knowledge management from an interdisciplinary perspective, development of innovation and technologies, progress monitoring and deviation correction, and risk communication and information. In this context, health works with the comprehensiveness of collective health and transcends health public policy in a broad sense.

Collaborations

RF Silva and LTC Silveira participated in the conception and design of the study, analysis and interpretation of data and writing of the article. AM Siqueira and AB Oliveira carried out a critical review of the intellectual content. All authors approved the final version to be published.

References

1. Brasil. Ministério da Saúde (MS). Conselho Nacional de Saúde (CNS). Resolução nº 588, de 12 de julho de 2018. *Política Nacional de Vigilância em Saúde*. Brasília: MS; 2018.
2. Brasil. Ministério da Integração Nacional. *Classificação e Codificação Brasileira de Desastres (Cobrade)* [Internet]. 2012 [acessado 2018 maio 6]. Disponível em: http://www.integracao.gov.br/documents/3958478/0/Anexo+V+-Cobrade_com+simbologia.pdf/d7d8bb0b-07f3-4572-a6ca-738daa95feb0.
3. Narváez L, Lavell A, Ortega GP. *La gestión del riesgo de desastres: un enfoque basado en procesos*. Lima: Maiteé Flores Piérola - PullCreativo S.R.L; 2009.
4. Valencio N. Desastre como prática sociopolítica de solapamento da segurança humana. In: Carmo R, Valencio N, organizadores. *Segurança humana no contexto dos desastres*. São Carlos: RiMa; 2014. p. 15-44.
5. United Nations Office for Disaster Risk Reduction (UNDRR). *Sendai Framework for Disaster Risk Reduction 2015-2030*. Geneva: UNDRR; 2015.
6. Organização Pan-Americana da Saúde (OPAS). Agenda de saúde sustentável para as Américas 2018-2030: um chamado à ação para a saúde e o bem-estar na região. In: *Anais da 29ª Conferência Sanitária Pan -Pmericana, na 69ª Sessão do Comitê Regional da OMS para as Américas*. Washington, D.C.; 2017 set 25-29.
7. Almeida LS, Cota ALS, Rodrigues DF. Saneamento, arboviroses e determinantes ambientais: impactos na saúde urbana. *Cien Saude Colet* 2020; 25(10):3857-3868.
8. Singer M, Bulled N, Ostrach B, Mendenhall E. Syndemics and the biosocial conception of health. *Sci Direct* 2017; 389(10072):941-950.
9. Horton R. Offline: COVID-19 is not a pandemic. *Lancet* 2020; 396(10255):874.
10. Brasil. Ministério da Saúde (MS). Secretaria de Vigilância em Saúde. *Manual de direito sanitário com enfoque na vigilância em saúde*. Brasília: MS; 2006.
11. Merhy EE, Bertussi DC, Santos MLM, Rosa NSF, Slomp Junior H, Seixas CT. Pandemia, Sistema Único de Saúde (SUS) e Saúde Coletiva: composições e aberturas para mundos outros. *Interface (Botucatu)* 2021; 26:e210491.
12. Gleriano JS, Fabro GCR, Tomaz WB, Goulart BF, Chaves LDP.Reflexões sobre a gestão do Sistema Único de Saúde para a coordenação no enfrentamento da COVID-19. *Esc Anna Nery* 2020; 24(n. esp.):e20200188.
13. Silva AM, Xavier DR, Rocha V. Do global ao local: desafios para redução de riscos à saúde relacionados com mudanças climáticas, desastre e Emergências em Saúde Pública. *Saude Debate* 2020; 44(n. esp. 2):48-68.
14. Oliveira AB, Freitas CM, Barcellos C, Vater MC, Fehn AC, Silveira LTC, Dal Poz MR, Galliez RM, Medronho RA. *Organização emergencial da rede de atenção à saúde no estado do Rio de Janeiro para enfrentamento da pandemia do novo coronavírus (COVID-19): nota Técnica conjunta de pesquisadores da UFRJ, Uerj e Fiocruz*. Rio de Janeiro: Fiocruz; 2020.
15. Brasil. Ministério da Saúde (MS). Secretaria de Vigilância em Saúde. *Plano de resposta às emergências em saúde pública*. Brasília: MS; 2014.
16. Silveira LTC, Oliveira AB. Desafios e estratégias para a organização do setor saúde frente à pandemia de COVID-19. *Res Soc Develop* 2020; 9(8):e543985987.
17. Grupo de Ensino, Pesquisa e Extensão de Saúde em Emergências e Desastres (GEPESED-UFRJ). *Curso online lições aprendidas em desastres: o caso da COVID-19* [Internet]. [acessado 2022 mar 3]. Disponível em: https://www.youtube.com/c/GEPESEDUFRJ/videos.
18. The R Project for Statistical Computing. S*oftware R para os cálculos estatísticos* [programa de computador]. [acessado 2022 mar 3]. Disponível em: www.r--project.org.
19. Python [programa de computador]. [acessado 2022 mar 3]. Disponível em: www.python.org.
20. Souza MAR, Wall ML, Thuler ACMC, Lowen IMV, Peres AM. O uso do software Iramuteq na análise de dados em pesquisas qualitativas. *Rev Esc Enferm USP* 2018; 52:1-7.
21. Silva S, Ribeiro EAW. O software Iramuteq como ferramenta metodológica para análise qualitativa nas pesquisas em educação profissional e tecnológica. *Braz J Edu Technol Soc*2021; 14(2):275-284.
22. Camargo BV, Justo AM. *Tutorial para uso do software de análise textual IRAMUTEQ* [Internet]. Florianópolis: Universidade Federal de Santa Catarina; 2013 [acessado 2022 mar 3]. Disponível em: http://www.iramuteq.org/documentation/fichiers/tutoriel-en-portugais.
23. Marchenzini V. As ciências sociais nos desastres: um campo de pesquisa em construção. *BIB* 2018; 83(1):3-72.
24. Valêncio N. Desastre, ordem social e planejamento em Defesa Civil: o contexto brasileiro. *Saude Soc* 2010; 19(4):748-762.
25. Valencio N. Por um triz: ordem social, vida cotidiana e segurança ontológica na crise relacionada à pandemia de COVID-19. *Soc Quest* 2020; XXIII(48):53-44.
26. Quarantelli EL, Perr RWA. Uma agenda de pesquisa do século 21 em ciências sociais para os desastres: questões teóricas, metodológicas e empíricas, e suas implementações no campo profissional. In: Perry RW, Quarantelli EL. *What is a disaster? New answers to old question.* Bloomington: Xlibris Corporation; 2005. p. 325-396.
27. Mateddi M. Dilemas e perspectivas da abordagem sociológica dos desastres naturais. *Tempo Soc Rev Soc USP* 2017; 29(3):261-285.
28. Silva IVM, Freitas CM, Freitas LE. Vulnerabilidade institucional do setor saúde a desastres: perspectiva dos profissionais e gestores de Nova Friburgo. *Saude Debate* 2020; 44(n. esp. 2):188-201.
29. Beck U. *Sociedade de risco: rumo a uma outra modernidade*. 2ª ed. 2ª reimp. São Paulo: Editora 34; 2016.
30. Luhmann N. *Sociología del riesgo.* 1ª ed. México: Universidad Iberoamericana; 1992.
31. Organização das Nações Unidas (ONU). *Covid-19 e desenvolvimento sustentável: avaliando a crise de olho na recuperação*. Brasília: UNICEF, ONU, OPAS; 2021.
32. Naciones Unidas. Comisión Económica para América Latina y el Caribe (CEPAL). *Panorama Social de América latina, 2020*. Santiago: Naciones Unidas; 2021.

33. Barreto LM. Desigualdade em saúde: uma perspectiva global. *Cien Saude Colet* 2017; 22(7):2097-2108.
34. Sanhueza-Sanzana C, Aguiar IWO, Almeida RLF, Kendall C, Mendes A, Kerr LRFS. Desigualdades sociais associadas com a letalidade por COVID-19 na cidade de Fortaleza, Ceará, 2020. *Epidemiol Serv Saude* 2021; 30(3):1-12.
35. Giddens A. *As consequências da modernidade.* São Paulo: Fundação Editora da UNESP; 1991.

Article submitted 11/07/2022
Approved 14/11/2022
Final version submitted 16/11/2022

Chief editors: Romeu Gomes, Antônio Augusto Moura da Silva