Ciência & Saúde Coletiva
cienciaesaudecoletiva.com.br
ISSN 1413-8123. v.29, n.12
DOI: 10.1590/1413-812320242912.09392024EN

REVIEW ARTICLE

Health surveillance among indigenous populations in the context of COVID-19: a scoping review

Angela Oliveira Casanova (https://orcid.org/0000-0002-7888-9490) [1]
Verônica Marchon-Silva (https://orcid.org/0000-0002-8267-0096) [2]
Martha Suárez-Mutis (https://orcid.org/0000-0003-2809-6799) [2]
Maria Luiza Silva Cunha (https://orcid.org/0000-0001-7565-7996) [1]
Michele Souza e Souza (https://orcid.org/0000-0002-8014-8528) [3]
Paulo César Peiter (https://orcid.org/0000-0001-8383-4542) [2]
Marcelly de Freitas Gomes (https://orcid.org/0000-0002-5468-0094) [1]
Marly Marques da Cruz (https://orcid.org/0000-0002-4061-474X) [1]

Abstract *The study aimed to identify protection strategies used by Indigenous peoples during the COVID-19 pandemic. Analyzing 56 articles from 2020 to May 2021 across four areas –community organization, governance, communication, and territorial approaches – it found that structural vulnerabilities shaped their responses. The spread of the virus was influenced by environmental, social, and cultural factors. Indigenous groups employed diverse strategies like collective decision-making and traditional knowledge. Challenges included data suppression and barriers to ethnic identification. The study emphasizes the need for greater Indigenous autonomy in data management and effective coordination among government, civil society, and Indigenous organizations.*
Key words *Indigenous peoples, COVID-19, Public health surveillance*

[1] Laboratório de Avaliação de Situações Endêmicas Regionais, Departamento de Endemias Samuel Pessoa, Escola Nacional de Saúde Pública Sérgio Arouca, Fundação Oswaldo Cruz. R. Leopoldo Bulhões 1480, Manguinhos. 21041-210 Rio de Janeiro RJ Brasil. angela.casanova@fiocruz.br
[2] Laboratório de Doenças Parasitárias, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz. Rio de Janeiro RJ Brasil.
[3] Instituto de Medicina Social, Universidade do Estado do Rio de Janeiro. Rio de Janeiro RJ Brasil.

Introduction

The COVID-19 pandemic has been one of the twenty-first century's greatest health challenges. It exacerbated the social situation on the planet, having a greater impact on the most vulnerable groups and exposing a perverse social inequality[1]. Latin America and the Caribbean are home to 54.8 million Indigenous people, and North America, to 7.6 million[2], with a rich diversity of traditions and ways of life. They have faced genocide, inequality, and impoverishment for centuries[3,4]. Factors such as poverty, stigmatization, stress, racism, sexism, ostracism, and structural violence have a greater influence on the determination of diseases than the nature of the pathogens or the people's physical condition[5].

Indigenous people are exceptional for their leading role in creating their own strategies for confronting COVID-19 in their communities, in addition to their political advocacy for more appropriate and effective measures to address the emergency. It is well-known how much "the views of Indigenous peoples are essential to the sustainability of policies and programs that address local and global challenges, including poverty, inequality, social conflicts, and climate change. Institutions and mechanisms for the participation of Indigenous peoples have proven useful in contributing their perspectives and interests to the formation of policies"[2].

This study aimed to identify these protective strategies, developed in the face of COVID-19 to reduce the Indigenous peoples' vulnerabilities.

Method

This work is a scoping review designed to explore the breadth of literature on the topic, mapping evidence, and informing future studies[6], consisting of seven stages: defining the guiding question; searching databases; identifying articles; screening and reading abstracts; selecting articles; and analyzing and interpreting results.

The Population/Problem; Intervention; Comparison and Outcomes (PICO) strategy[7] was adapted to develop the following research question: 'What surveillance, prevention, and control strategies (I) were developed (C) by the Indigenous peoples (P) to reduce their risk/vulnerability to COVID-19 (O)?'

This approach considered that health surveillance strategies in the context of the COVID-19 pandemic would include identifying sources of infection and modes of transmission, monitoring cases and deaths, and laboratory diagnoses, as well as conditions related to the spread of diseases in groups exposed to greater risks, reinforcing the need to produce updated and reliable data to protect the vulnerable Indigenous population and preserve their ways of life[8]. In addition, the use of a situational approach incorporates health issues and their determinants as the object of intervention[9].

The search strategy was conducted in the databases, based on the Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH), combining controlled and uncontrolled descriptors, using alternative terms adapted to each database, separated by Boolean operators "and" and "or" (Chart 1). The main descriptors were Health surveillance, COVID-19, and Indigenous population.

In the first search, the articles were exported to the Rayyan application (QCRI-http://rayyan.qcri.org/), a tool used to organize and select articles. After excluding duplicates and analyzing titles and abstracts, a pair of researchers, in a double-blind evaluation, selected the articles according to inclusion and exclusion criteria (Chart 2). A third evaluator made the final decision when there was any disagreement.

Using the final sample, information on the objectives, strategies, results, and discussions extracted from a spreadsheet in Microsoft Excel® software was summarized with the following data: title; authors, year, and origin/country of publication; origin/country where the research was conducted; language; objectives/purpose/phenomenon of interest; study population/participants; method; main findings; recommendations; and context (geographic, cultural). Data extraction characterized the general aspects of the study, as well as the results and their contribution to the discussion on COVID-19 surveillance, prevention, and control strategies pertaining to Indigenous peoples. Reading the articles in full allowed for the systematization of knowledge, as per the sections presented below.

Results and discussion

Initially, 4,359 articles were found, with 790 duplicates, leaving 3,569 articles. Based on titles and abstracts, 108 articles were reached in the screening stage. Of these, 40 were removed because they were not related to surveillance and/or were not freely available in full, totaling 68 arti-

Chart 1. Complete electronic search strategy according to the databases searched.

Database	Search strategy
Biblioteca Virtual em Saúde (BVS)	("INDIGENAS") AND ("COVID-19")
	("INDIGENAS") AND ("COVID-19") AND (pais_assunto:("brasil"))
	("INDIGENAS") AND ("COVID-19") AND ("vigilância em saúde pública") AND (pais_assunto:("brasil"))
Scielo	"População Indígena" OR "Povos Indígenas" OR "Comunidades Indígenas" OR "Indígenas" OR "Saúde Indígena" OR "Saúde das Populações Indígenas" OR "Saúde de Povos Indígenas" OR "Saúde dos Povos Indígenas" OR "distritos sanitários especiais indígenas" AND "COVID-19" OR "2019-nCoV". Indígenas" AND "COVID-19"
PubMed	(("Public Health Surveillance" OR "Public Health Policy" OR "Public Health" OR "Health, Community" OR "Health, Public" OR "Epidemiological Monitoring" OR "Epidemiologic Monitoring" OR "Epidemiologic Surveillance" OR "Health Control" OR "Sanitary Surveillance" OR "Sanitary Vigilance" OR "Sanitation Vigilance") AND ("Indigenous Population" OR "Indigenous Peoples" OR "Indigenous Communities" OR "Indigenous People" OR "Health of Indigenous Peoples" OR "Indigenous Health" OR "Indigenous' Health" OR "special indigenous health districts")) AND ("COVID-19" OR "2019 novel coronavirus Pneumonia" OR "2019 novel coronavirus Epidemic" OR "2019 novel coronavirus Pandemic" OR "2019-nCoV Acute Respiratory Disease" OR "2019-nCoV Epidemic" OR "2019-nCoV Pandemic" OR "2019-nCoV Pneumonia") (("Indigenous") AND ("covid-19"))
Scopus	TITLE-ABS-KEY ("Public Health Surveillance" OR "Public Health Policy" OR "Public Health" OR "Epidemiological Monitoring" OR "Epidemiologic Monitoring" OR "Epidemiologic Surveillance" OR "Health Control" OR "Sanitary Surveillance" OR "Sanitary Vigilance" OR "Sanitation Vigilance" AND "Indigenous Population" OR "Indigenous People" OR "Indigenous Communities" OR "Indigenous People" OR "Health of Indigenous People" OR "Indigenous Health" OR "special indigenous health districts" AND "COVID-19" OR "2019 novel coronavirus Pneumonia" OR "2019 novel coronavirus Epidemic" OR "2019 novel coronavirus Pandemic" OR "2019-nCoV Acute Respiratory Disease" OR "2019-nCoV Epidemic" OR "2019-nCoV Pandemic" OR "2019-nCoV Pneumonia")
Web of Science	TS=(("Public Health Surveillance" OR "Public Health Policy" OR "Public Health" OR "Epidemiological Monitoring" OR "Epidemiologic Monitoring" OR "Epidemiologic Surveillance" OR "Health Control" OR "Sanitary Surveillance" OR "Sanitary Vigilance" OR "Sanitation Vigilance") AND ("Indigenous Population" OR "Indigenous People" OR "Indigenous Communities" OR "Indigenous People" OR "Health of Indigenous People" OR "Indigenous Health" OR "special indigenous health districts") AND ("COVID-19" OR "2019 novel coronavirus Pneumonia" OR "2019 novel coronavirus Epidemic" OR "2019 novel coronavirus Pandemic" OR "2019-nCoV Acute Respiratory Disease" OR "2019-nCoV Epidemic" OR "2019-nCoV Pandemic" OR "2019-nCoV Pneumonia")). Tempo estipulado: Todos os anos.
Academic Search Complete EBSCO	"Public Health Surveillance" OR "Public Health Policy" OR "Public Health" OR "Epidemiological Monitoring" OR "Epidemiologic Monitoring" OR "Epidemiologic Surveillance" OR "Health Control" OR "Sanitary Surveillance" OR "Sanitary Vigilance" OR "Sanitation Vigilance" AND "Indigenous Population" OR "Indigenous People" OR "Indigenous Communities" OR "Indigenous People" OR "Health of Indigenous People" OR "Indigenous Health" OR "special indigenous health districts" "COVID-19" OR "2019 novel coronavirus Pneumonia" OR "2019 novel coronavirus Epidemic" OR "2019 novel coronavirus Pandemic" OR "2019-nCoV Acute Respiratory Disease" OR "2019-nCoV Epidemic" OR "2019-nCoV Pandemic" OR "2019-nCoV Pneumonia" – Brasil
Embase	'indigenous people' AND 'coronavirus disease 2019' AND brazil
	'indigenous people' AND 'coronavirus disease 2019' AND brazil AND ('public health'/ OR 'public policy')
Science Direct ELSEVIER	Title, abstract, keywords: "indigenous" AND "COVID-19" AND "Brazil"

Source: Authors.

Chart 2. Inclusion and exclusion criteria used to select articles for analysis.

Inclusion criteria	Exclusion criteria
- Original articles published between March 2020 and May 2021; - Articles available in the defined databases focusing on health surveillance, prevention, and control actions that address the health situation of indigenous peoples; - Publications in English, Portuguese, and Spanish; - Publications in open access databases.	- Publications dealing with medium and high complexity health care, pharmaceutical care, diagnostic support, clinical trials, epidemiological studies, and theses and dissertations; - Publications in audio and video format; - 'Grey' publications: reports, technical notes, blogs, news, editorials, and bulletins produced and published by institutions and other groups that are not distributed or indexed by journals and, therefore, are peer-reviewed; - Studies carried out on specific topics, such as obstetrics and pediatrics, oncology, mental health, food security, women's health, children's health, specific health problems (treatment of malaria, HIV, tuberculosis), health of healthcare workers, racism, and black or Asian populations.

Source: Authors.

cles. After a full reading, eight more articles were discarded considering the exclusion criteria, and four because they were duplicates, leaving 56 articles in the final sample. The selection process was then visually organized in a Prisma10 flowchart (Figure 1).

The 56 articles in the final sample were organized into thematic axes, which were not mutually exclusive, and whose conceptual definitions and the list of selected articles are presented in Chart 3.

Among the 56 selected articles, 24 were by authors from Brazil, 14 from the United States, 5 from Australia, 4 from other South American countries, 3 from Canada, 2 from New Zealand, 2 from India, 1 from South Africa, and 1 from Fiji. Of the Brazilian articles, 13 were comprehensively found on Indigenous peoples; 5 with a spatial focus - Xingu region, Upper Solimões River, and the states of Amazonas and Roraima; 2 focused on urban contexts; and 4 focused on ethnic groups - the Yanomami, Karitiana, Terena, and Korubo. In the other countries, articles on Amerindians prevailed, of which 3 were on Alaskan natives and 2 on the Hopi tribe, followed by those on Australian natives (5), the First Nations of Canada (2), and the Maori people (2).

Grassroots surveillance and community organization

Different initiatives and ways in which Indigenous peoples self-organized were found. In Brazil, the participation of Indigenous leaders and organized Indigenous groups in shaping the policy to combat the pandemic was emphasized[11,17,23], demonstrating the relevance of the ways in which traditional peoples live when facing the issues that affect them, such as the COVID-19 pandemic.

At the national level, the following stood out as grassroots surveillance: monitoring the 'Indigenous Quarantine' (Articulation of Indigenous Peoples of Brazil) portal[11]; creation of videos by various ethnic groups, use of social media and support networks to disseminate information, including in Indigenous languages; campaigns to provide food and basic items; creation of physical barriers[12,17]; partnerships between health agencies and Indigenous people and the creation of an Indigenous Emergency Portal; Indigenous association liaisons with various actors, institutions, and Indigenous activists; the formation of a national solidarity network, formalization of complaints of omission by the Federal Government with emergency, judicial, national, and international actions; preparation of a plan to combat COVID-19; creation of SOS on social media; and the publication of informative brochures in their native languages[8,12].

Gonçalves *et al*.[52] pointed out how the different forms of geographic access made native strategies for combating the epidemic unique. Given the few initiatives adopted by official authorities to control COVID-19, the Yanomami tribes engaged in self-protection through tradi-

tional practices, such as medicinal baths, leaf/root teas, and healing rituals based on the notion of 'xawara', smoke from the epidemic related to contact with non-Indigenous people.

Mondardo[19] highlighted the Indigenous peoples' capacity to self-organize by closing villages through sanitary barriers, the use of apps to monitor cases, the use of herbs in traditional medicine, and the making of masks by Indigenous women.

In the international context, similarities and differences were observed in the experiences found in Brazil. The American Indian and Alaska Native communities worked together with the Johns Hopkins Center for American Indian Health, with whom they already had a previous relationship. The collaboration with tribal partners and dialogue with the community included building a promotion, surveillance, and care network, creating a welfare fund for psychosocial support, and distributing food and other resources[27]. In Australia[15], lessons learned from other experiences related to health emergencies, such as the H1N1 influenza pandemic in 2009, led the government to value the engagement of Indigenous nations in jointly confronting the pandemic. The strategies included legislative changes that regulated visitor access; developing national COVID-19 guidelines; planning health services, infrastructure, and workforce; expanding the number of rapid testing sites; preparing and distributing educational materials; and epidemiological tracking of COVID-19[15].

In New Zealand, the Māori have had a lower infection rate than non- Māori, which was attributed to the Indigenous self-determination movement that had been interactively organized before the emergence of COVID-19, which formed a partnership consisting of and governed by nine peoples called Te Pūtahitanga o Te Waipounamu[18]. This partnership developed and implemented a response plan. Strategies included entry checkpoints, distribution of inputs (firewood, medicines), provision of transportation and energy, data production, Whānau care plans, and practices based on tradition and social cohesion[18].

The community organization of Indigenous peoples has lead to reflection on the autonomy of these peoples. In an experiment with Native Americans, three levels of autonomy relevant to health decisions were considered – individual, tribal, and health professional, with the tribal level being tested on the occasion of COVID-19 and the establishment of checkpoints by an American tribe. 'Taking care of one's own' corresponds to the third level, being an important expression of the self-sufficiency and autonomy of natives in decision-making in matters of Indigenous health[26].

One case study involving Benin, Fiji, France, Gabon, Guyana, Guatemala, India, and Madagascar highlighted the challenges and opportunities in how Indigenous Peoples and Local Communities (IPLCs) responded to COVID-19. The use of traditional medicine for COVID-19 symptoms was perceived as high with regard to Indigenous and local practices. The study recommended key actions to support Indigenous peoples and local communities when facing future pandemics while protecting their lands and water resources[25].

The experience among Indigenous peoples in Peru also highlighted the importance of intercultural issues and the capacity of Indigenous peoples to implement autonomous initiatives. Although there is no lack of regulations regarding the intercultural approach to standards of care, recognizing the value of ancestral knowledge is still necessary to meet the health needs of Indigenous peoples[36].

Governance and information

Relative to the governance category, the articles focused their discussion on the lack of access to disaggregated data and ethnic identification, making it more difficult to understand the real impact of COVID-19 among Indigenous peoples and, consequently, make better-informed decisions. Articles were also found referring to coordination between sectors – government, research institutes, Indigenous leaders/organizations – as the best way to respond to the pandemic.

Carroll *et al.*[29] problematized the policies related to genocide, racism, and historical marginalization, all of which contribute to limitations in the quality, quantity, access, and use of COVID-19 data, indicating that timely and quality data are necessary so these peoples can outline their own responses to the pandemic. There are concerns regarding the collection and use of these data, such as privacy, consent, racist surveillance, and algorithmic profiling. They mentioned the Brazilian experience of the Kuikuro Indigenous Association of the Upper Xingu, which created an Indigenous COVID-19 alert app, as an example of a community-based data surveillance system. They added that governments, organizations, and researchers should collaborate with Indige-

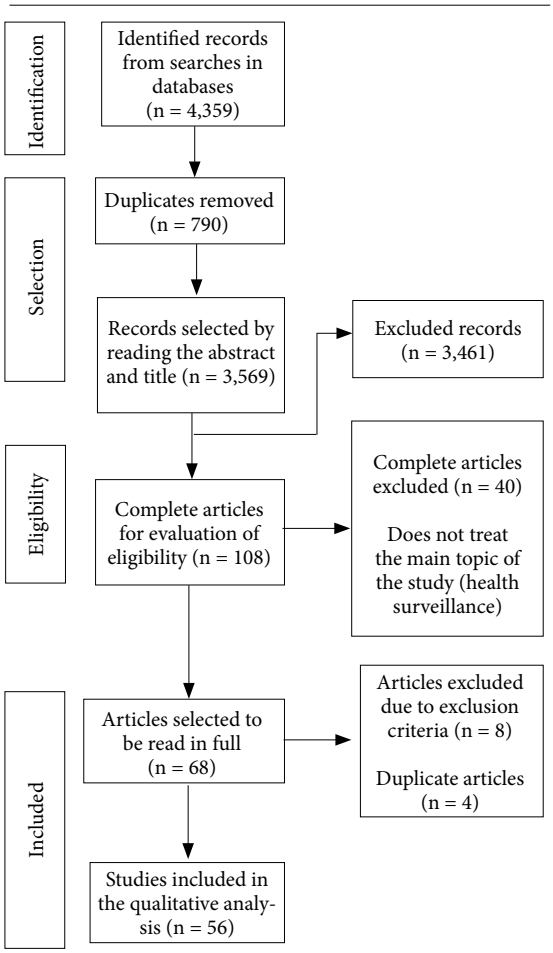

Figure 1. Flowchart of the identification and selection of studies.

Source: Adapted from PRISMA[6].

nous people on their own terms to improve access to and use of these data. Yellow Horse et al.[42] also highlighted the inaccurate understanding of the impacts of COVID-19 on Indigenous peoples due to the systematic erasure of Indigenous representation in data and race classification, which was present before the pandemic.

The control of COVID-19 among the Indigenous peoples of the Torres Strait Islands resulted in rapid and effective action by their leaders and organizations. Governance was implemented through interaction between the government and community participation. However, there are data gaps in the health situation, community infrastructure available for health care, and access to health actions[31].

In India, the importance of strengthening primary health care (PHC), improving hospital capacity and performance, accessing health technologies, and including COVID-19 surveillance in the Integrated Disease Surveillance Program (IDSP) were highlighted as crucial requirements for governing the health system, considering that, despite funding reforms, the main challenge was to organize public services[40]. They considered that the better response capacity of countries, such as Korea, Australia, New Zealand, and the Scandinavian nations, was the result of robust health systems[40].

The Waorani communities of Ecuador have seen self-isolation strategies fail to contain the spread of COVID-19 from urban areas to remote and isolated communities, as contact tracing and adequate notification in some of these areas by the Ministry of Health were delayed, leading to massive contagion. "...the lack of immediate response by state governments exposed the deficient health services in rural areas." Community leaders took preventive measures – wearing masks, self-isolating, and community isolation –claiming their legal rights in the face of the government's evident neglect. Delayed access to testing may have affected the decision to self-isolate, which was adopted by different communities[35].

Authors in Brazil have indicated the need for seroepidemiological surveys in Amazonian communities to raise the level of information on the epidemic, increase the population's ability to adhere to the control measures, and establish specific recommendations in the region, with a view to evidence-based health governance[41].

Damasco *et al.* (30) assessed population presence and mobility within Indigenous lands, emphasizing the need to prioritize certain municipalities, improve logistical organization, and establish additional healthcare units in municipalities with Indigenous territories. This approach aimed to alleviate pressure on municipal healthcare systems, which often attract individuals from other regions. Canalez *et al.*[28] underscored the need to demystify "images" about the Amazon – geographic isolation, territorial size, and densely forested areas – perpetuated in government narratives, which instilled the false expectation that COVID-19 would not spread inland, especially in territories with rural communities that are difficult to access, making them 'untouchable'. The movement of people, information, and objects between communities in rural areas and urban centers, including Manaus, occurs via the Amazon River waterways, and the

Chart 3. Axes of analysis, definition, and selected articles.

Axes of Analysis	Definition	SELECTED ARTICLES Main author and year of publication
Popular surveillance and community organization	Estratégias formuladas e desenvolvidas por meio de processos participativos da comunidade indígena. A vigilância popular e a organização comunitária possuem forte componente participativo e democrático, buscando abrir pontes para o diálogo e ampliação de práticas e ações com vistas a mitigar os impactos da COVID-19, numa perspectiva solidária, crítica e emancipatória – e como atores e sujeitos de sua própria história[11].	Amado (2020)[12]; Araújo (2020)[13]; Carneiro (2020)[11]; Conde (2020)[1]; Cupertino (2020)[14]; Crooks (2020)[15]; Guimarães (2020)[16]; Jardim (2020)[17]; Mcmeeking, (2020)[18]; Mondardo (2020)[19]; Moodie (2020)[20]; O'keefe (2021)[21]; Ribeiro (2020)[22]; Silva (2021)[23]; Te One (2021)[24]; Walters (2021)[25]; Wescott (2020)[26].
Governance and Health Information	• Governmental and/or non-governmental strategies to combat COVID-19 in indigenous territories, including: • Intersectoral coordination to address the health, social, and economic effects of the pandemic; • Data management and production, case monitoring strategies, and improvement or qualification of information systems.	Aulandez (2021)[27]; Canalez (2020)[28]; Carroll (2021)[29]; Damasco (2020)[30]; Griffiths (2021)[31]; Hengel (2021)[32]; Hiraldo (2021)[33]; Maudrie (2021)[34]; Ortiz-prado (2021)[35]; Pesantes (2020)[36]; Pratt (2021)[37]; Santos (2020)[38]; Silva (2021)[8]; Spence (2020)[39]; Sundararaman (2020)[40]; Vallinoto (2020)[41]; Yellow Horse (2020)[42].
Health Communication	Communication as the disputed process of bestowing meaning upon events, phenomena, experiences, and discourses about the world and society. In this approach, the different contexts – historical, economic, political, institutional, but also textual, intertextual, existential, and situational43 – play a decisive role in communication processes. From this perspective, we consider articles with communicative strategies/ approaches, access and/or use of communication technologies, including social networks, to confront COVID-19 in an indigenous context.	Araújo (2020)[13]; Carvalho (2020)[44]; García (2020)[45]; Guimarães (2020)[16] Kerrigan (2021)[46]; O'keefe (2021)[21]; Silva (2020)[47]; Silva (2020)[48].
Territorial approach	The concept of territory, according to Rafestin49, incorporates power relations established in space, whose definition expresses a specific project of use, enjoyment, and domination of this space, and everything that exists in it, by different social groups. We consider territory to be a product of power relations in space, of which the State is one of the main actors, although not the only one, producing territorialities. It is understood that the various actors present in geographic space exercise and construct their own territorialities as well as establish relations with exteriority[50].	Amado (2020)[12]; Carneiro (2020)[11]; Canalez (2020)[28]; Damasco (2020)[30]; Ewuoso (2021)[51]; Gonçalves (2020)[52]; Humeyestewa (2021)[53]; Jenkins (2020)[54]; Kaplan (2020)[55]; Leonard (2020)[56]; Mallard (2021)[57]; Matos (2021)[58]; Mendes (2022)[59]; Nascimento (2020)[60]; Palamim (2020)[61]; Polidoro, (2021)[62]; Reinders (2020)[63]; Rodrigues (2021)[64]; Silva (2021)[8]; Vave (2021)[65]; Yellow Horse (2020)[42].

Source: Authors.

lack of roads connecting municipalities is not an obstacle. This article's conclusions intersect with those of Damasco *et al.*[30] by highlighting the weak hospital infrastructure and the presence of Intensive Care Units (ICU) only in the state capital, which increases the chances of death. This situation is similar in those countries that border the microregion (Colombia and Peru), where users also need to travel long distances to reach the nearest treatment centers[30].

The limited actions of the Secretariat of Indigenous Health (SESAI) of the Brazilian Ministry of Health are notable, as it lacked a policy to protect Indigenous people living in urban centers. These individuals are often in a legal vacuum and face increased vulnerability [60]. They suffer prejudice and exclusion, victims of their deterritorialization. Given the lack of contingency plans considering the needs of isolated, such as the Korubo in the Javari Valley, Indigenous associations have drawn up their own emergency plans[47]. The delay of Brazil's government agencies in responding to the pandemic for Indigenous peoples resulted in the first initiatives – sanitary barriers and self-isolation – being led by the Indigenous people themselves and supported by associations.

Hengel *et al.*[32] showed the need to improve access to rapid test results since, in many countries, people live in rural and remote communities, creating barriers to timely results, proposing the implementation of PCR tests at decentralized points of care in Aboriginal communities in the Torres Strait, Australia, using GeneXpert platforms, with governance and funding models by the Australian government. Maudrie [et al.][34] underscored the challenges American Indians/Alaskan Natives faced in meeting their needs, and the role of associations and social organizations in supporting these populations, especially Native American LifeLines (NAL), a health service center that serves the Mid-Atlantic and Northeast regions. At the beginning of the pandemic, NAL staff called more than 700 Indigenous people to provide health education about COVID-19, and assess and meet the needs of community members, ranging from food and cleaning supplies to financial assistance and wellness strategies.

Still in relation to the Indigenous peoples of Alaska, Pratt *et al.*[37] described that the adoption of non-pharmacological strategies, such as encouraging people to 'stay at home', use masks and social distancing, helped reduce the number of people infected with COVID-19 on the Blackfeet Tribal Reservation (USA). The Centers for Disease Control and Prevention (CDC) supported this initiative with guidance and free testing, in addition to the joint action of local Indigenous health services responsible for providing medical and public health services to members of Native American tribes so as to identify, monitor, and control cases.

In the context of health governance, national governments were not sufficiently agile to address the diverse needs of Indigenous peoples effectively[38,43]. Pre-existing issues related to service organization and data production further impeded the ability to make well-informed decisions.

However, it was clear how the liaison between different actors, such as institutes, researchers, and the government, contributed to collaborative governance for the development of necessary and culturally adapted actions.

Health communication

Communication strategies during public health crises should provide evidence for community engagement in developing collective actions to confront and mitigate the risks[38,66]. The linguistic diversity among Indigenous populations represents a greater challenge for these strategies.

Indigenous populations have placed communication production at the center of strategies aimed at confronting COVID-19, due to the lack of information management and transparency by official surveillance services regarding cases and deaths, resulting in under-reporting; little or no support from the federal government or local authorities; and the need for communication that takes into account the cultural specificities and singularities of Indigenous peoples[38,43].

Indigenous people in Roraima used social media to create spaces for political debate in light of the crisis in services and concealment of information by official bodies. These spaces were used to give visibility to Indigenous issues as a way to convey information about health measures and publicize campaigns to collect goods, including aid to Indigenous people living in urban areas[16]. Social media highlighted the role of the Indigenous Council of Roraima and the Hutukara Yanomami Association in publishing prevention guidelines on their pages, honored the memory of Indigenous people who died from COVID-19, and fought against the propagation of fake news[16]. "Online resources are used to break the isolation in which many communities live and overcome the barrier of the lack of space that these people have in traditional media"[67] (p.14).

Brazil's Xingu community used social media, live broadcasts with experts, podcasts, and printed materials to distribute information, releasing a booklet in Portuguese and Kayapó with guidelines for preventing COVID-19, aimed at reaching an audience without internet access, cementing a partnership with local radio stations to disseminate information, especially to remote Indigenous communities[44].

Studies[16,44,67] showed that the diffusion of information in the context of COVID-19 within the Indigenous population has formulated a concept that dialogues with the assumptions of health promotion, especially as regards the valorization and resignification of knowledge and practices, considering the integrality and unique contexts in which these populations are inserted in an attempt to confront the disease. The dialogue between cultures and knowledge is also highlighted in the Javari Valley, with emphasis on the situation of the recently contacted Korubo[47,48]. As they do not have an Indigenous Korubo Health Agent, and there are villages without electricity or radio, the primary means of communication is through EMSI, which have to travel long distances to reach their villages. The communication challenges between health professionals and the Korubo highlight the importance of recognizing their culture by creating viable and consensual alternatives to help them respond to the pandemic. According to El Kadri *et al.*[68], it is important to "build an intercultural dialogue capable of proposing an alternative political position to hegemonic geopolitical, cultural, social, knowledge construction, and power distribution practices".

The importance of communication and dialogue in Ecuador, Peru, and Bolivia that take cultural specificities into account when dealing with COVID-19 was addressed by García et al.45, who suggested that inadequate linguistic and intercultural communication can compromise the understanding of important information, exacerbating the vulnerability of Indigenous peoples in the face of the crisis. One example was the use of pictures of urban-style 'stay-at-home' homes in middle-class Ecuadorian neighborhoods, which are very different from the characteristics of homes in rural communities, surrounded by open spaces. The concept of home in most Indigenous communities includes extended families and relatives. Similar situations, with important messages for disease prevention and control, decontextualized in relation to the Indigenous reality, were observed in other countries and ethnic groups, reinforcing the importance of disseminating preventive health messages and recommendations, taking into account their specificities.

Short videos shared on social media platforms highlighting the importance of language have been used among First Nations and Torres Strait Islander peoples in Australia[46]. To help spread disease prevention messages in a timely manner, videos were shared by Indigenous health organizations using local radio, TV, and social media networks, including WhatsApp groups for healthcare professionals, encouraging doctors to show the videos to their patients. Messages delivered by trusted community members who acted as cultural intermediaries between the medical board and their community proved to be effective.

Studies in this area demonstrated that increased awareness of COVID-19 and the fight against its spread occurred by translating messages into native languages with different dissemination strategies to ensure updated and accessible information, requiring interventions appropriate to the specific sociocultural context. Access to and use of communication technologies should be based on the adoption of intercultural strategies for the protection and comprehensive healthcare of Indigenous peoples[33,68].

Territorial approach

Territory should be understood as a product of power relations that permeate social life[50], overcoming the political-administrative conception of areas delimited by some instance of power. That way, the complexity involved in managing the pandemic and the conflicts underlying the implementation of surveillance, prevention, and control measures can be addressed.

In the Javari Valley, recently contacted peoples, such as the Korubo, fled their villages into the forest at the same time that sanitary barriers were being established[47,48], but social isolation did not prevent these activities from being interrupted[14]. Among the Yanomami, the invasion of their lands by miners intensified during the pandemic and proved to be one of the main vectors of disease transmission, as well as a constant threat to their territorial rights[16].

Hegemonic groups with economic power in Brazil, such as those linked to agribusiness and mining, have a vested interest in land ownership. Thus, the land issue is crucial to understanding Brazilian social formation, which gave rise to the exclusion and inequality that continue even to this day[62].

No matter how far removed they are from the surrounding (non-Indigenous) societies, most Indigenous populations are exposed to the spread of pathogens that circulate within the country, as well as in neighboring countries, given that there are various ways to connect with the villages, whether through health professionals, the Indigenous people's own movement between villages and cities, or contact with invaders[58].

In a globalized society and economy, based precisely on the hyper circulation of people and goods, measures to restrict movement, such as those recommended to control COVID-19, have a profound impact on people's daily lives, with the most vulnerable populations suffering the most from their effects.

The issues that stand out in the articles concerning territory and COVID-19 concern the management of Indigenous territories amid the pandemic, with the restriction of access to these lands by non-Indigenous populations[52]; the control of flows of Indigenous people between villages and cities where they purchase their supplies and sell their products[28]; the right to land and control over people entering and leaving during an epidemic, even when it goes against the interests of non-Indigenous groups with whom they share the land; the political pressure on these populations and lands that is antagonistic to Indigenous identity and their constitutional rights to release the land for economic exploitation by non-Indigenous interest groups; the various attempts to establish necropolitics concerning ethnic-cultural minorities[12,22,52,56]; and the entry into Indigenous areas and the risk of spreading COVID-19 by groups of farmers, loggers, miners, tourists, and vacationers[52,56].

Measures taken through the initiative of the Indigenous people themselves at the beginning of the pandemic, such as an increased control or prohibition of entry and exit from their villages by creating sanitary barriers, the control of outside contacts through testing and quarantine before entering Indigenous areas, and the control of the Indigenous people's entry upon their return to villages from other areas, are highlighted[22,51,53,54,58,59,61,65]. Another highlighted point is that, in Brazil, the National Foundation for Indigenous Peoples (FUNAI), the government agency responsible for controlling Indigenous lands, had a careless attitude towards the entry of religious missionaries and other actors, such as loggers and miners, who could be carriers of Sars-Cov-2[22,26,52,55,56].

Some of the main recommendations identified in the set of analyzed articles are systematized in Chart 4.

Conclusion

The scientific literature on surveillance strategies designed to protect Indigenous peoples against COVID-19 has facilitated a deeper understanding of the diverse contexts in which Indigenous peoples' struggle for survival took place, showing an area of disputes that did not solely depend on the coronavirus, but rather on different structural vulnerabilities that have existed for centuries[60,64]. These vulnerabilities are present in all Indigenous peoples regardless of the country's level of socioeconomic development, and are observed in nations ranging from low to high income[57,63]. A limitation of this study was that it was not possible to analyze the relationship between the design of public policies and surveillance strategies, given the scope of the review. Furthermore, the search period focused on the early years of the pandemic, when evidence and articles were still being developed.

This review showed that, although susceptibility to COVID-19 is general, its spread is mediated by environmental, social, and cultural factors, revealing aspects of the structuring and organization of society. The pandemic evolved differently in each country, region, place, and social stratum, resulting in an epidemic with distinct regional and social dynamics. Nonetheless, Indigenous peoples worldwide have demonstrated their capacity for organization, mobilization, and resistance, finding ways to care for one another and developing multiple strategies to combat the pandemic on different spatial scales.

Knowing the strategies and knowledge produced, nationally and internationally, in confronting the pandemic among Indigenous peoples was important for systematizing learning and recommendations to qualify public policies aimed at Indigenous peoples and further strengthen their participation and autonomy.

The experiences in which governmental and nongovernmental institutions acted in a coordinated and integrated manner with Indigenous peoples, encompassing their own experience and knowledge, were concrete examples of powerful intercultural health actions aimed at protecting these peoples.

Chart 4. Systematization of recommendations from selected studies.

Source: Authors.

Collaborations

All authors participated in all stages of the work.

Funding

Programa Inova Fiocruz – Inova Covid-19 – Geração de Conhecimento (Knowledge Generation).

References

1. Conde M. Brazil in the time of coronavirus. *Geopolítica(s)* 2020; 11(Esp.):239-249.
2. Dhir RK, Cattaneo U, Cabrera Ormaza MV, Coronado H, Oelz M. *Aplicación del Convenio sobre pueblos indígenas y tribales núm. 169 de la OIT: hacia un futuro inclusivo, sostenible y justo*. Ginebra: OIT; 2019.
3. Pino SD, Camacho A. Considerações sobre povos indígenas, afrodescendentes e outros grupos étnicos durante a pandemia de COVID-19 [Internet]. 2020. [acessado 2023 ago 3]. Disponível em: https://iris.paho.org/handle/10665.2/52280
4. United Nations (UN). *State of the world's indigenous peoples*. Nova York: UM; 2009.
5. Bispo Júnior JP, Santos DBD. COVID-19 como sindemia: modelo teórico e fundamentos para a abordagem abrangente em saúde. *Cad Saude Publica* 2021; 37(10):e00119021.
6. Tricco AC, Lillie E, Zarin W, O'Brien K, Colquhoun H, Kastner M, Levac D, Ng C, Sharpe JP, Wilson K, Kenny M, Warren R, Wilson C, Stelfox HT, Straus SE. A scoping review on the conduct and reporting of scoping reviews. *BMC Med Res Methodol* 2016; 16(1):15
7. Santos CMDC, Pimenta CADM, Nobre MRC. The PICO strategy for the research question construction and evidence search. Rev Latino-Am Enfermagem. junho de 2007; 15(3):508-511.
8. Silva LLD, Nascimento PE, Araújo OCG, Pereira TMG. The Articulation of the Indigenous Peoples of Brazil in Facing the Covid-19 Pandemic. *Front Sociol* 2021; 6(61):13661.
9. Vilasbôas AL. *Vigilância à saúde e distritalização: a experiência de Pau da Lima* [dissertação]. Salvador: Universidade Federal da Bahia; 1988.
10. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, Moher D, Peters MDJ, Horsley T, Weeks L, Hempel S, Akl EA, Chang C, McGowan J, Stewart L, Hartling L, Aldcroft A, Wilson MG, Garritty C, Lewin S, Godfrey CM, Macdonald MT, Langlois EV, Soares-Weiser K, Moriarty J, Clifford T, Tunçalp Ö, Straus SE. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med* 2018; 169(7):467-473.
11. Carneiro FF, Pessoa VM. Iniciativas de organização comunitária e Covid-19: esboços para uma vigilância popular da saúde e do ambiente. *Trab Educ Saude* 2020; 18(3):e00298130.
12. Amado LHE, Ribeiro AM. Panorama e desafios dos povos indígenas no contexto da pandemia do Covid-19 no Brasil. *Rev Interdis Sociol Direito* 2020; 22(2):335-360
13. Araújo IM. Os Karitiana e a Covid-19. *Mundo Amazon* 2020; 11(2):201-210.
14. Cupertino GA, Cupertino MDC, Gomes AP, Braga LM, Siqueira-Batista R. COVID-19 and Brazilian Indigenous Populations. *Am J Trop Med Hyg* 2020; 103(2):609-612.
15. Crooks K, Casey D, Ward JS. First Nations peoples leading the way in COVID-19 pandemic planning, response and management. *Med J Aust* 2020; 213(4):151.
16. Guimarães LMA, Ferreira-Júnior A. Lutas políticas por populações indígenas em Roraima (Brasil) e o enfrentamento à pandemia Covid-19. *Mundo Amazon* 2020; 11(2):223-243.
17. Jardim PT, Dias IMAV, Grande AJ, O'keeffe M, Dazzan P, Harding S. COVID-19 experience among Brasil's indigenous people. *Rev Assoc Med Bras* 2020; 66(7):861-863.
18. McMeeking S, Leahy H, Savage C. An Indigenous self-determination social movement response to COVID-19. *AlterNative* 2020; 16(4):395-398.
19. Mondardo M. Povos indígenas e comunidades tradicionais em tempos de pandemia da Covid-19 no Brasil: estratégias de luta e resistência. *Finisterra* 2021; 55(115):81-88.
20. Moodie N, Ward J, Dudgeon P, Adams K, Altman J, Casey D, Cripps K, Davis M, Derry K, Eades S, Faulkner S, Hunt J, Klein E, McDonnell S, Ring I, Sutherland S, Yap M. Roadmap to recovery: Reporting on a research taskforce supporting Indigenous responses to COVID-19 in Australia. *Aust J Social Issues* 2021; 56(1):4-16.
21. O'Keefe VM, Maudrie TL, Ingalls A, Kee C, Masten KL, Barlow A, Haroz EE. Development and dissemination of a strengths-based indigenous children's storybook: "Our smallest warriors, our strongest medicine: overcoming COVID-19". *Front Sociol* 2021; 6:611356.
22. Ribeiro AA, Rossi LA. Covid-19 pandemic and the motivations for demanding health service in indigenous villages. *Rev Bras Enferm* 2020; 73(Supl. 2):e20200312.
23. Silva WNT, Rosa MFP, Mendonça KS, Queiroz GA, Oliveira SV. Síndrome respiratória aguda grave em indígenas no contexto da pandemia da COVID-19 no Brasil: uma análise sob a perspectiva da vigilância epidemiológica. *Vigil Sanit Debate* 2021; 9(1):2-11.
24. Te One A, Clifford C. Tino Rangatiratanga and Well-being: Māori Self-Determination in the Face of Covid-19. *Front Sociol* 2021; 6:613340
25. Walters G, Pathak Broome N, Cracco M, Dash T, Dudley N, Elías S, Hymas O, Mangubhai S, Mohan V, Niederberger T, Nkollo-Kema CA, Oussou Lio A, Raveloson N, Rubis J, Mathieu Toviehou SAR, Van Vliet N. COVID-19, Indigenous peoples, local communities and natural resource governance. *PARKS* 2021; 27(Spe.):57-72.
26. Wescott S, Mittelstet B. Three levels of autonomy and one long-term solution for Native American health care. *AMA J Ethics* 2020; 22(10):856-861.
27. Aulandez KMW, Walls ML, Weiss NM, Sittner KJ, Gillson SL, Tennessen EN, Maudrie TL, Leppi AM, Rothwell EJ, Bolton-Steiner AR, Gonzalez MB. Cultural sources of strength and resilience: a case study of holistic wellness boxes for COVID-19 response in Indigenous communities. *Front Sociol* 2021; 6:612637.
28. Canalez GD, Rapozo P, Coutinho T, Reis R. Dissemination of COVID-19 inside the Amazon territories: overview and reflections from the Alto Solimoes, Brazil. *Mundo Amazon* 2020; 11(2):111-144.
29. Carroll SR, Akee R, Chung P, Cormack D, Kukutai T, Lovett R, Suina M, Rowe RK. Indigenous peoples' data during COVID-19: from external to internal. *Front Sociol* 2021; 6:617895.
30. Damasco FS, Antunes M, Azevedo M. Deslocamentos da população indígena para acesso aos serviços de saúde: elementos para ações emergenciais de enfrentamento à COVID-19. *GEOgraphia* 2020; 22(48):1-32.

31. Griffiths K, Ring I, Madden R, Pulver LJ. In the pursuit of equity: COVID-19, data and Aboriginal and Torres Strait Islander people in Australia. *Stat J IAOS* 2021; 37(1):37-45.
32. Hengel B, Causer L, Matthews S, Smith K, Andrewartha K, Badman S, Spaeth B, Tangey A, Cunningham P, Saha A, Phillips E, Ward J, Watts C, King J, Applegate T, Shephard M, Guy R. A decentralised point-of-care testing model to address inequities in the COVID-19 response. *Lancet Infect Dis* 2021; 21(7):e183-e190.
33. Hiraldo J, James K, Carroll SR. Case report: Indigenous sovereignty in a pandemic: tribal codes in the United States as preparedness. *Front Sociol* 2021; 6:617995.
34. Maudrie TL, Lessard KH, Dickerson J, Aulandez KMW, Barlow A, O'Keefe VM. Our collective needs and strengths: urban AI/ANs and the COVID-19 pandemic. *Front Sociol* 2021; 6:611775.
35. Ortiz-Prado E, Rivera-Olivero IA, Freire-Paspuel B, Lowe R, Lozada T, Henriquez-Trujillo AR, Garcia-Bereguiain MA; UDLA COVID-19 Team. Testing for SARS-CoV-2 at the core of voluntary collective isolation: Lessons from the indigenous populations living in the Amazon region in Ecuador. *Int J Infect Dis* 2021; 105:234-235.
36. Pesantes MA, Gianella C. What about intercultural health?: lessons from the pandemic that we should not forget. *Mundo Amazon* 2020; 11(2):93-110.
37. Pratt CQ, Chard AN, LaPine R, Galbreath KW, Crawford C, Plant A, Stiffarm G, Rhodes NS, Hannon L, Dinh TH. Use of stay-at-home orders and mask mandates to control COVID-19 transmission – Blackfeet Tribal Reservation, Montana, June-December 2020. *MMWR Morb Mortal Wkly Rep* 2021; 70(14):514-518.
38. Santos FV. Mulheres indígenas contra o vírus: notas antropológicas sobre políticas públicas de saúde e os impactos da COVID-19 entre os povos indígenas em contexto urbano em Manaus, Brasil. *Ponto Urbe* 2020; 27:1-22.
39. Spence N, Chau V, Farvid MS, White J P, Rasalingam P, Loh L. The COVID-19 pandemic: Informing policy decision-making for a vulnerable population. *Int Indigenous Policy J* 2020; 11(3):1-39.
40. Sundararaman T. Health systems preparedness for COVID-19 pandemic. *Indian J Public Health*. 2020; 64(6):91.
41. Vallinoto ACR, Torres MKS, Vallinoto MC, Vallinoto IMVC. The challenges of COVID-19 in the Brazilian Amazonian communities and the importance of seroepidemiological surveillance studies. *Int J Equity Health* 2020; 19(1):140.
42. Yellow Horse AJ, Parkhurst NAD, Huyser R. COVID-19 in New Mexico tribal lands: understanding the role of social vulnerabilities and historical racisms. *Front Sociol* 2020; 5:22.
43. Araújo ISD, Cardoso JM. *Comunicação e saúde*. Rio de Janeiro: Editora Fiocruz; 2007.
44. Carvalho LM, Nascimento FAA, Granato RR, Damasceno OC, Teixeira FB, Sato DA. e-COVID Xingu: mídias sociais e informação no combate à COVID-19 em Altamira, Pará. *Rev Bras Educ Med* 2020; 44(Supl. 1):e142.
45. García GM, Haboud M, Howard R, Manresa A, Zurita J. Miscommunication in the COVID-19 Era. *Bull Lat Am Res* 2020; 39(Suppl. 1):39-46.
46. Kerrigan V, Lee AM, Ralph AP, Lawton PD. Stay Strong: Aboriginal leaders deliver COVID-19 health messages. *Health Promot J Austr* 2021; 32(Suppl. 1):203-204.
47. Silva JO. A Covid-19 na Terra Indígena Vale do Javari: entraves e equívocos na comunicação com os Korubo. *Mundo Amazon* 2020; 11(2):145-168.
48. Silva JO. O isolamento é possível? O caso de um povo de recente contato do Vale do Javari. *Cad Campo* 2020; 29(Supl.):244-254.
49. Raffestin C. *Por uma Geografia do Poder*. São Paulo: Ática; 1993.
50. Garnelo L, Sampaio SS, Pontes AL. *Atenção diferenciada: a formação técnica de agentes indígenas de saúde do Alto Rio Negro*. Rio de Janeiro: Editora Fiocruz; 2019.
51. Ewuoso C, Cordeiro-Rodrigues L. Khoikhoi perspectives on public health: Indigenous values for a COVID-19 response in South Africa. *J Glob Health* 2021; 11:03032.
52. Gonçalves LDV, Sousa M, Lutaif T. Covid-19 na Terra Indígena Yanomami: um paralelo entre as regiões do alto rio Marauiá, Alto Rio Negro e Vale dos rios Ajarani e Apiaú. *Mundo Amazon* 2020; 11(2):211-222.
53. Humeyestewa D, Burke RM, Kaur H, Vicenti D, Jenkins R, Yatabe G, Hirschman J, Hamilton J, Fazekas K, Leslie G, Sehongva G, Honanie K, Tu'tsi E, Mayer O, Rose MA, Diallo Y, Damon S, Zilversmit Pao L, McCraw HM, Talawyma B, Herne M, Nuvangyaoma TL, Welch S, Balajee SA. COVID-19 response by the Hopi Tribe: impact of systems improvement during the first wave on the second wave of the pandemic. *BMJ Glob Health* 2021; 6(5):e005150.
54. Jenkins R, Burke RM, Hamilton J, Fazekas K, Humeyestewa D, Kaur H, et al. Notes from the Field: Development of an Enhanced Community-Focused COVID-19 Surveillance Program – Hopi Tribe, June-July 2020. *MMWR Morb Mortal Wkly Rep* 2020; 69(44):1660-1661.
55. Kaplan HS, Trumble BC, Stieglitz J, Mamany RM, Cayuba MG, Moye LM, Hirschman J, Honanie K, Herne M, Mayer O, Yatabe G, Balajee SA. Voluntary collective isolation as a best response to COVID-19 for indigenous populations? A case study and protocol from the Bolivian Amazon. *Lancet* 2020; 395(10238):1727-1734.
56. Leonard K. Medicine lines and COVID-19: Indigenous geographies of imagined bordering. *Dialogues Human Geography* 2020; 10(2):164-168.
57. Mallard A, Pesantes MA, Zavaleta-Cortijo C, Ward J. An urgent call to collect data related to COVID-19 and Indigenous populations globally. *BMJ Glob Health* 2021; 6(3):e004655.
58. Matos BA, Pereira B, Santana CR, Amorin F, Lenin L, Oliveria LC. Violações dos direitos à saúde dos povos indígenas isolados e de recente contato no contexto da pandemia de covid-19 no Brasil. *Mundo Amazon* 2021; 12(1):106-138.
59. Mendes MF, Rogini LP, Lima TM, Melani1 VF, Palamim1 CVC, Boschiero MN, Marson FAL. COVID-19 pandemic evolution in the Brazilian Indigenous population. *J Racial Ethn Health Disparities* 2022; 9(3):921-937.

60. Nascimento LFM, Correa IZN, Nogueira CBC, Almeida RLP. O limbo jurídico do direito à saúde de indígenas residentes em contexto urbano e os reflexos no enfrentamento do COVID-19: uma análise a partir da cidade de Manaus, Amazonas. *Direito Publico* 2020; 17(94):250-277.
61. Palamim CVC, Ortega MM, Marson FAL. COVID-19 in the Indigenous population of Brazil. *J Racial Ethn Health Disparities* 2020; 7(6):1053-1058.
62. Polidoro M, Mendonça FA, Meneghel SN, Alves-Brito A, Gonçalves M, Bairros F, Canaves D. Territories under siege: risks of the decimation of Indigenous and Quilombolas peoples in the context of COVID-19 in South Brazil. *J Racial Ethn Health Disparities* 2021; 8(5):1119-1129.
63. Reinders S, Alva A, Huicho L, Blas MM. Indigenous communities' responses to the COVID-19 pandemic and consequences for maternal and neonatal health in remote Peruvian Amazon: a qualitative study based on routine programme supervision. *BMJ Open* 2020; 10(12):e044197.
64. Rodrigues EPS, Abreu IN, Lima CNC, Fonseca DLM, Pereira SFG, Reis LC, Vallinoto IMVC, Guerreiro JF, Vallinoto ACR. High prevalence of anti-SARS-CoV-2 IgG antibody in the Xikrin of Bacajá (Kayapó) indigenous population in the Brazilian Amazon. *Int J Equity Health* 2021; 20(1):50.
65. Vave R. Urban-rural compliance variability to COVID-19 restrictions of Indigenous Fijian funerals in Fiji. *Asia Pac J Public Health* 2021; 33(6-7):767-774.
66. Santos MO, Peixinho BC, Cavalcanti AMC, Silva LGF, Silva LIM, Lins DOA, Gurgel AM. Estratégias de comunicação adotadas pela gestão do Sistema Único de Saúde durante a pandemia de COVID-19 – Brasil. *Interface (Botucatu)* 2021; 25(Supl. 1):e200785.
67. Bueno C. Comunidades indígenas usam internet e redes sociais para divulgar sua cultura. *Cienc Cult* 2013; 65(2):14-15.
68. El Kadri MR, Silva SESE, Pereira AS, Lima RTS, organizadores. *Bem viver: saúde mental indígena*. Porto Alegre: Rede Unida; 2021.

Article submitted 15/09/2023
Approved 29/02/2024
Final version submitted 03/06/2024

Chief editors: Maria Cecília de Souza Minayo, Romeu Gomes, Antônio Augusto Moura da Silva