Government actions to address the disinformation crisis during the COVID-19 pandemic

Ações governamentais para enfrentamento da crise de desinformação durante a pandemia da Covid-19

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ABSTRACT The profusion of fake news disseminated in the context of the COVID-19 pandemic posed new challenges to governments, health care managers and professionals, media and entities committed to protect health and life. Government actions from different countries faced with this problem are the object of this integrative review study which analyzed 16 articles, after searching three bibliographic databases, from November 2020 to January 2021 using inclusion and exclusion criteria. Grouped by continents (Asia, Europe and Latin America), the results pointed to: the existence of regulatory devices; criminalization of disinformation; digital communication regulation; use of technologies to bring closer government and citizens; monitoring and verification of fake news; creation of rebuttal news platforms; digital network approaches for identification and removal of news and accounts; disinformation crisis as a foment for political divergence; among other issues. Differences and inequalities marked government actions against disinformation in the context of the COVID-19 pandemic reflecting social cohesion, leadership, institutional trust or coercive force. In-depth studies are suggested to understand how societies with different types of government, economies, and political regimes define the actions taken to control disinformation and their potential effectiveness.

KEYWORDS Communication. Disinformation. COVID-19.

RESUMO *A profusão de notícias falsas disseminadas no contexto da pandemia da Covid-19 colocou novos desafios a governos, gestores e profissionais de saúde, mídia e entidades de defesa da saúde e da vida. As ações governamentais de diferentes países frente a esse problema são o objeto deste estudo de revisão integrativa, que analisou 16 artigos, após busca em três bases de dados bibliográficos, no período de novembro de 2020 a janeiro de 2021, utilizando critérios de inclusão e exclusão. Agrupados por continentes (Ásia, Europa e América Latina), os resultados apontaram: existência de dispositivos reguladores; criminalização da desinformação; regulamentação da comunicação digital; uso de tecnologias para aproximar governo e cidadãos; monitoramento e verificação de notícias falsas; uso de plataformas refutadoras; redes digitais para identificação e remoção de notícias e contas; crise de desinformação como fomento para a divergência política; entre outros. Diferenças e desigualdades marcam as ações governamentais frente à desinformação no contexto da pandemia da Covid-19, refletindo coesão social, liderança, confiança institucional ou força coercitiva. Sugerem-se estudos aprofundados, que permitam compreender como as sociedades, com diferentes tipos de governo, economias e regimes políticos, definem as ações desenvolvidas para o controle da desinformação e seu potencial de eficiência.*

PALAVRAS-CHAVE *Comunicação. Desinformação. Covid-19.*

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Introduction

The dissemination of fake news in contemporary society has become a problem of great importance to public health causing harm to populations and social groups regarding adherence to preventive measures and health protection. As a worldwide phenomenon characteristic of the COVID-19 pandemic, it has been the object of study by researchers from various fields of knowledge given its ability to influence politics, culture, and various social practices[1-3].

In the contemporary society, organized in network on the Internet in which the communicational relationship is digitalized, horizontal, multireferential, and multidirectional, everyone can be senders and receivers of messages[4]. It enables the expansion of such phenomenon which is not new, but existed in a smaller dimension and severity. The massive use of replicator computer (robots) of fake news has intensified the spread of produced and published lies through the massive issuance of online posts whose objective was to discredit dissenting opinions[5].

It has become a commonplace to refer to this phenomenon as fake news whose logic is old and, according to Silva[6], affects reputations and harms people's image and incites hatred aiming to "[...] spread distrust, uncertainty, intensify existing sociocultural divisions using nationalist, ethnic, racial and religious tensions"[7(45)]. This issue is related to the crisis of scientific rationality in which rational discourse, argumentation, and dialogue are, to a certain extent, no longer viable giving way to magical thinking suggesting pseudo-solutions, equally magical and life-saving instead of confronting the roots of the society's problems[5].

The novelty of fake news in the contemporary context is its ability to interfere in political decisions due to the transformation of politics and action on the internet, radically changing the debates that require greater depth in times of crisis[8].

Thus, the objective of this article is to approach the governments' efforts in different countries regarding actions or omissions in order to manage this extremely serious problem of production, distribution, and consumption of information causing informational chaos and disinformation during the COVID-19 pandemic with damages to the populations' health.

Conceptual approaches: disinformation, fake news, and governmental actions

The term fake news has been widely used to refer to various information problems. However, some authors consider that it fails to translate the global phenomenon and does not bring epistemological gain to identify its impacts or provide solutions[9,10]. This is so because it is a polysemic term without consensus used both to refer to inaccurate/incorrect data published with no intention of causing damage (misinformation) and to refer to intentionally falsified information spread to cause damage to third parties (disinformation); and also when referring to facts of private life made public to cause harm to people who occupy a prominent position in society such as leaders, politicians, and others (mal-information)[7,10].

Some authors prefer to call the phenomenon 'disinformation', emphasizing the intentional character in the production and propagation of false, misleading or decontextualized information to cause a communication crisis obtaining economic and/or political advantages[9] and promoting informational disorder.

It is worth noting that in contemporary times disinformation is accompanied by the phenomenon of post-truth, a consequence of the informational disorder that has been established on the internet in the network society[4]. According to Amaral and Santos[11(68)], the emergence of the post-truth era is related to the decline of trust in science

and valorization of individual beliefs and values showing itself as "the most visible and episodic face of disinformation".

However, it does not happen by chance but by the initiative of the giant internet companies (Google and Facebook mainly) seeking differentiated and segmented circulation of information guided by commercial interests. From the records of each user's digital footprint, they organize algorithms that can manipulate the existing large-scale data (Big Data) favoring the creation of bubbles, or eco chambers, or filters, to access information[7]. In these bubbles, individuals who share the same vision of the world, politics, and society are connected to mutually reinforce each other so to consolidate their beliefs, opinions, and visions of the phenomena of life where the debate society's interests can take place[11].

Thus, the term disinformation became recognized as the one that goes beyond fake news. It refers to intentional information of different origins without scientific basis with potential to damage individuals and social groups being, therefore, necessary governmental actions to control them.

In the health field the dissemination of fake news has become a worldwide phenomenon, and of interest to people's health, as it casts doubt withing society on scientific standards, evidence-based medicine as well as the quality of public institutions intended to protect and promote health adding to the crisis of trust and credibility of institutions as described by Giddens[12] as a characteristic of modernity. In addition, social inequalities and difficulties in accessing reliable information make it more serious since lack of information leads to the adoption of individual and collective actions, sometimes denialists[11] which hinder the adoption of effective responses to the population' s health problems and needs.

In this context of global health crisis resulting from the COVID-19 pandemic, the World Health Organization (WHO) has called an 'infodemic' this socio-symbolic phenomenon characterized by an information crisis while the United Nations Educational, Scientific and Cultural Organization (UNESCO) uses the term 'disinfodemic' to define the 'basic disinformation about COVID-19 disease'[13].

Hence, the digitized public arena[14] can be characterized by the competition of newly produced scientific knowledge with the beliefs formulated and disseminated by different social actors about the disease in a context of lack of knowledge and great uncertainty about the new coronavirus either regarding the ways of transmission or about the signs and symptoms of the disease, prevention measures, protection, and treatment. Several examples are cited by Galhardi et al.[15] who found widespread information about COVID-19 arising from popular beliefs without scientific basis. The circulation of this type of information is harmful as it competes in the symbolic market[16] with those recommended by experts and scientists which effectively provide some protection against the virus.

Material and methods

Since it is an object under construction, and given the recent emergence of the research problem, this study is an integrative review that, according to Ercole et al.[17], allows to access extensive information and synthesizing results in an orderly, systematic, and comprehensive way.

Therefore, based on the research question 'What governmental actions were taken to confront the infodemic of fake news during the COVID-19 pandemic?', a search was carried out in three bibliographic databases (VHL, Scopus and Web of Science) using the Boolean descriptors and operators: Fake News AND Coronavirus OR COVID-19, in the year 2020. The search was conducted between November 2020 and January 2021

with the following inclusion criteria for articles: containing in the title, abstract, or key words the descriptors: false news, fake news, misinformation, infodemic; misleading information, information conflict; and be freely accessible and published in Portuguese, Spanish or English.

In the VHL, in a search conducted in November 2020, a total of 237 articles were found and after exclusion of repeated articles addressing fake news on other health problems (oncology, drugs, among others),

only nine articles were left that referred to government responses to the fake news during the coronavirus pandemic. In Scopus 151 articles were found, 15 of which were about government responses to fakes news during the coronavirus pandemic. In the Web of Science 118, of which only four were about the subject of this study and were freely accessible. In all, 28 articles met the inclusion criteria from which 12 repetitions were excluded. In the end, 16 articles were selected for this study.

Figure 1. Flowchart of the articles search in three bibliographic databases
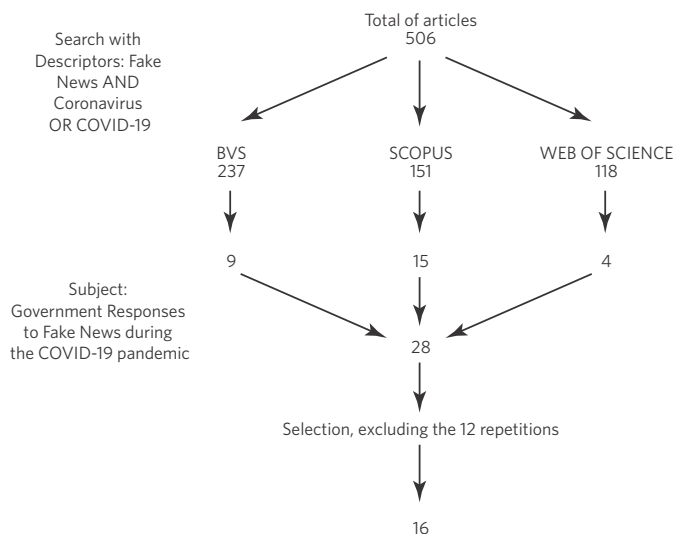
Source: Own elaboration.

The articles were translated into Portuguese, read in full, with emphasis on governmental actions to face the disinformation crisis following the health crisis by COVID-19 in the different countries addressed in the study. Data were organized in analysis matrices and systematized by countries and types of actions. In the analysis stage, common and divergent actions were sought among the different countries, making note of the government regimes of each country as a potential

explanatory category for the actions found, and in dialogue with existing literature on the fake news.

Results and discussion

The results clustered by countries are described and analyzed below, considering the different continents and pondering on whether the actions developed are related to

the political regimes of the studied countries' governments.

Disinformation crisis and governmental actions in Asian countries

Six articles of the research corpus covered policies and actions of Asian countries[18-23], standing out in the scientific production in Asia: China, the epicenter of the pandemic; India, where governmental actions to face disinformation during the COVID-19 pandemic were opposite to the previous country; as well as Vietnam and Malaysia. *Table 1* summarizes the main findings in the Asian countries comprised in the research corpus.

Table 1. Selected articles included in the corpus of the study with emphasis on the addressed countries

Article	Countries	Authors	Title
			ASIA
A1.	China and India	Rodrigues U, XU J.	Regulation of COVID-19 fake news infodemic in China and India. Media International Australia, 2020, 177 (1), pp. 125-131. https://journals.sagepub.com/doi/full/10.1177/1329878X20948202 (acessado em 03/01/21).
A2.	China	Hua J, Shaw R.	Vírus Corona (Covid-19) "infodêmico" e questões emergentes através de lentes de dados: o caso da China. International Journal of Environmental Research and Public Health, 2020, 17 (7), art. n. 2309. https://www.mdpi.com/1660-4601/17/7/2309 (acessado em 14/01/21).
A3.	China	Zou H, Shu Y, Feng T.	How Shenzhen, China avoided widespread community transmission: A potential model for successful prevention and control of COVID-19. Infectious Diseases of Poverty, 2020, 9 (1), art. n. 89. https://link.springer.com/article/10.1186/s40249-020-00714-2 (acessado em 14/01/21).
A4.	Vietnam	Nguyen TTP, Duy Cao Nguyen DC, Nguyen ATT, Nguyen LH, Vu GT , Nguyen CT, Nguyen TH, Le HT.	Fake News Affecting the Adherence of National Response Measures During the COVID-19 Lockdown Period: The Experience of Vietnam. Frontiers in Public Health, 2020, 8, art. n. 589872. https://internal-journal.frontiersin.org/articles/10.3389/fpubh.2020.589872/full (acessado em 13/01/21).
A5.	Vietnam	Linh TNQ, Hanh TTT, Shaw R.	COVID-19 initial preparedness and response in VIETNAM during the first six months of the pandemic and the lessons for Sendai framework implementation. International Journal of Disaster Resilience in the Built Environment, 2020. https://www.emerald.com/insight/content/doi/10.1108/IJDRBE-07-2020-0080/full/html (acessado em 14/01/21).
A6.	Malaysia	Yusof ANM, Muuti MZ, Ariffin LA, Tan MKM.	Sharing Information on COVID-19: the ethical challenges in the MALAYSIAN setting. Asian Bioethics Review, 2020, 12 (3), pp. 349-361. https://link.springer.com/article/10.1007/s41649-020-00132-4 (acessado em 14/01/21).
			EUROPA
A7.	Spain	Elías C.	Scientific experts and government communication in the age of fake news analysis of the information strategy of the COVID-19 in Spain. Prisma Social, 2020, (31), pp. 6-39. https://covid19.elsevierpure.com/zh/publications/scientific-experts-and-government-communication-in-the-age-of-fak-2 (acessado em 08/01/21).
A8	Italy	Falcone R, Sapienza A.	How COVID-19 Changed the Information Needs of Italian Citizens. International Journal of Environmental Research and Public Health, 2020, 17 (19), art. n. 6988, pp. 1-19. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7579097/#:~:text=Italy%20was%20the%20first%20European,19%2C%20facing%20an%20unprecedented%20situation.&text=By%20making%20use%20of%20a,address%20the%20most%20reliable%20sources (acessado em 14/01/21).
A09	Spain	Diaz J C L, Fernandez LR, Rojano FJP.	Governmental communication and emotions in the covid-19 crisis in Spain. Revista Latina de Comunicacion Social, 2020 (78), pp. 23-40. https://pesquisa.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/resource/pt/covidwho-966343 (acessado em 14/01/21).

Table 1. (cont.)

Article	Countries	Authors	Title
A10	Italy and Spain	De Blasio E, Selva D.	Affective governance during the COVID-19 crisis: Building leadership, trust, and good citizens. Tripodos, 2020, 1 (47), pp. 67-86. http://www.tripodos.com/index.php/Facultat_Comunicacio_Blanquerna/article/view/804 (acessado em 21/01/21).
A11	Ukraine	Patel SS, Moncayo OE, Conroy KM, Jordan D, Erickson TB.	The landscape of disinformation on health crisis communication during the COVID-19 pandemic in Ukraine: hybrid warfare tactics, fake media news and review of evidence. Journal of Science Communication, 2020, 19 (5), art. n. A05. https://jcom.sissa.it/archive/19/05/JCOM_1905_2020_A02 (acessado em 14/01/21).
		LATIN AMERICA	
A12	Peru	Alvarez-Risco A, Mejia CR, Delgado-Zegarra J, Del-Aguila-Arcentales S, Arce-Esquivel AA, Valladares-Garrido MJ, Del Portal MR, Villegas LF, Curioso WH, Sekar MC, Yáñez JA.	The Peru approach against the COVID-19 infodemic: Insights and strategies. American Journal of Tropical Medicine and Hygiene, 2020, 103 (2), pp. 583-586. https://www.ajtmh.org/view/journals/tpmd/103/2/article-p583.xml (acessado em 14/01/21).
A13	Dominican Republic	Tapia L.	COVID-19 and fake news in the Dominican Republic. American Journal of Tropical Medicine and Hygiene, 2020, 102 (6), pp. 1172-1174. https://www.ajtmh.org/view/journals/tpmd/102/6/article-p1172.xml (acessado em 14/01/21).
A14	Ecuador	Luque A, Maniglio F, Casado F, García-Guerrero J.	Transmedia context and twitter as conditioning the Ecuadorian. Tripodos, Communication. 2020, 2 (47), pp. 47-68. https://pesquisa.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/resource/pt/covidwho-1077268 (acessado em 14/01/21).
A15	Brazil	Henriques CMP, Vasconcelos W.	Crises dentro da crise: Ações, incertezas e desencontros no combate a pandemia da Covid-19 no Brasil. Estudos Avançados, 2020, 34 (99), pp. 25-44. https://www.arca.fiocruz.br/handle/icict/42723 (acessado em 14/01/21).
A16	Brazil	Ribeiro FA, Ribeiro FB, Leist AA.	Who is going to pay the price of COVID-19? Reflections about an unequal Brazil. International Journal for Equity in Health, 2020, 19 (1), art. n. 91. https://pesquisa.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/resource/en/covidwho-574851 (acessado em 14/01/21).

Source: Own elaboration

The development of some policy to restrain fake news was common to these countries including criminalization with legal sanctions and published information by official channels with more or less management capacity.

China – a socialist republic run by a single party, the Chinese Communist Party – has emphasized public safety and social responsibility to justify censorship of information on social media platforms, building the image of an effective and responsible government. When the SARS-CoV-2 pandemic emerged in this country, it was already prepared to deal with fake news because rumor control actions (fake news) began since President Xi Jinping took power in 2012 to control news about his authoritarian regime. From then on, several campaigns sought to curb rumors and in 2018 a rebuttal platform (http://www.piyao.org.cn/) was created connected with 40 local platforms to identify disinformation using artificial intelligence[18].

At that point, China already had anti-rumor mechanisms, advanced internet, and cyber security legislation in place since 2017, and already regulated and censored the circulation of information from internet groups. To address the 'rumors' surrounding COVID-19 specific sections were created on the platforms to refute false information, so all those that emerged were quickly removed; incorrect information rectified

and clarified through campaigns by local governments, health commissions, and police offices using the various platforms to remove messages, in addition to the sanctions applied such as shutting down accounts spreading fake news/rumors and arresting rumormongers.

The message "Do not produce, circulate or believe rumors and obey the law, citizens"[9(10)] was widely publicized in towns and cities, accompanied by information on sanctions. As such, China tackled the COVID-19 pandemic with a combination of some efforts which were key:

> [...] strong governance, strict regulation, strong community vigilance and citizen participation, and smart use of big data and digital technologies [...][19(10).]

A study reports that the incorporation of mobile technology, big data, and artificial intelligence in the COVID-19 response in the southern Chinese city of Shenzhen wtih 22 million people has increased accessibility to health services, reduced misinformation, and minimized the impact of fake news while emphasizing the resources used[20].

India – a republic made up of 28 states and seven union territories and a system of parliamentary democracy – faced difficulties and ultimately failed to balance censorship of misleading information and the respect for freedom of speech[18]. In that country, since the beginning of his government, the prime minister launched, in 2014, an affordable mobile service connecting a growing number of people in urban and rural India to the internet and social networks which made it impossible to detect the source and nature of circulating fake news messages. With the arrival of COVID-19, the government resorted to the disaster management law to block the internet in the country for three weeks to curb panic and made it a crime to spread fake news. It consulted with social media companies (Facebook, Twitter, ShareChat, and WhatsApp) to remove fake news preventing it from spreading in the country, and combined this initiative with a mass awareness campaign[18] highlighting the panic that could ensue from it.

This blockade was preceded by a request to the owners and editors of news media to publish positive stories about COVID-19, but the media challenged the request and the government appeal to prevent publications without its authorization was denied by the Supreme Court. The government, on the contrary, imposed the use of the official version of COVID-related facts under protest from journalists for the sake of preserving democracy and the freedom of speech. 'Mygov Corona' is the name of the chatbot (an intelligence-based computer program – robots – to mimic conversations with users of various platforms and applications) created on WhatsApp by a giant telecommunications company hired by the Indian government aiming to convey information from the Ministry of Health about coronavirus[18].

In Vietnam – country with a one-party socialist government in which the president is the highest office in the Communist Party – tackling fake news during the COVID-19 pandemic has motived studies that highlight the aspects affecting adherence to national response actions as well as the explicit mention of fake news among the limitations of these actions[21,22].

Thus, Vietnamese actions were emphasized such as: enforcement of the Cybersecurity Law (passed in 2018); establishment of official communication channels on social media websites such as the Government Information page on Facebook, or the official page of the ministry of health on Zalo (one of the most popular social apps in the country); reinforcement of preventive measures for ethnic minority groups in order to avoid stigmas; police agency actions in monitoring cases and eliminating false information in cyberspace, and direct

telephone contact with citizens by ministries and departments, which had never been done before. The authors also mention the types of problems caused by fake news in the country such as stockouts, lack of products in pharmacies and supermarkets, self-medication, strikes, misinformation about vaccine, among others[21].

A study by Linh et al.[22] adds as part of the Vietnamese government's actions the regulations along with economic sanctions to ensure high levels of compliance within communities. These authors point out the effective use of information technology to report infection risk, disease symptoms, prevention measures and high-risk areas, and reinforce the frequency of sharing and publicizing this information in a transparent and easily accessible way.

A review on the Malaysia response – a federal elective constitutional monarchy – discusses how information sharing can be handled ethically and argues that there are two problematic categories of information sharing on social media, namely: personal information of patients and their families by the public, authorities or third parties, and the dissemination of fake news or misleading information[23]. In response to the sharing of this type of information, the authors consider that the Malaysian authorities have replied well on social media, and numerous criminal investigations have been initiated by the authorities against individuals spreading fake news or misleading information.

This study also highlights official updates from authorities via networks such as the National Security Council Facebook pages and Telegram channels as well as platforms from the Ministry of Health; the development and launch of the MySejahtera app to assist in the management of the COVID-19 pandemic in the country by providing basic guidelines and regular updates to the public; daily press release by the Director General of Health[23].

Furthermore, the authors point out two measures taken to curb the spread of disinformation in Malaysia: a) the Malaysian Communications and Multimedia Commission (MCMC), which is the regulatory body for the communications and multimedia industry in the country, has launched a rapid response team to monitor suspicious news or claims made on the internet or social media about COVID-19. The team receives and fact-checks all suspicious social media posts, blogs or messages reported by the public. Any post or article on social media requiring clarification would be forwarded to the competent authorities to be checked. Those postings or articles would be posted on the Sebenarnya.my website (The truth) and labelled as fake news; b) warns the public about penalties for spreading false news or misleading information about COVID-19 based on the Multimedia and Communications Law of 1998, which upon conviction, is liable to a fine of up to MYR 100,000.00 or imprisonment up to two years, or both[23].

Government actions and society's responses to tackle disinformation in Europe

Five articles[24-28] highlight the discursive strategies and governmental actions to face disinformation in Europe, analyzing the experiences of Spain, Italy, and Ukraine. *Table 2* summarizes the main results in the European countries which comprised the research corpus.

Table 2. Actions to control disinformation on COVID-19 in Europe

Actions	Countries
Regulation, Criminalization, and Sanctions (imprisonment, fines).	Ukraine
Developed strategies to regain government trust with citizens.	Spain
It hired scientists to influence knowledge production for institutional intervention.	Spain
Government leaders sought to influence citizens in building trust and credibility of information about COVID-19 mediated in communicational practices.	Italy, France

Source: Own elaboration.

In Ukraine, the geopolitical crisis resulting from the conflict involving Crimea and Russia is entangled in the health and information crises during the pandemic in this Eastern European country (Patel et al.[24]). One of the Ukrainian government's actions was to pass a bill, analyzed in the Parliament, which provides for fines and penalties up to seven years in prison for the purposeful dissemination of disinformation. However, despite the government expanding citizens' access to telecommunications services during the pandemic, the consequences of disinformation remained disastrous, especially with the proliferation of fake news.

As for the other European countries, unlike studies conducted in other continents and countries, most articles prioritized the conceptual discussion of 'misinformation' and 'fake news' and the behavior of citizens facing these phenomena instead of focusing on the analysis of possible governmental actions to manage the information crisis associated with the COVID-19 pandemic. However, such actions are evidenced in the studies based on the authors' analysis of the state-society relationship.

In the case of Spain, according to Elías[25], the main governmental action taken to guarantee reliable information about the methods proposed to control the pandemic, and the population's adherence, was based on the use of scientists specialized in institutional communication. This strategy was already used by the government,

functioning as a shield in case of failure of actions. However, the 'scientists' were not those with academic careers, but 'executives' hired by the government and, as the author states, were discredited by citizens for being subordinated to the government.

Díaz et al.[26], on the contrary, suggest that emotions are also part of the relationship between citizens and between the State and citizens. They emphasize that emotional support is the second most valuable message and empathy is the most prominent characteristic of the received information. These researchers studied citizens' reactions to government actions throughout the COVID-19 pandemic in Spain, that is, how the Spanish government's institutional communication seeks to understand the citizens and dialogue with them. They argue that the capacity for empathy and understanding by the government is more appreciated than other aspects such as the clarity and speed of issuing messages.

In some studies, the affective dimension that surrounded the pandemic emerges as a relevant aspect in the government's relationship with citizens in order to face disinformation. From this perspective, De Blasio and Selva[27] adopt concepts of emotional governance, affective citizenship, and transformational leadership in their analyses on the actions of political leaders in Italy and Spain. De Blasio believes disinformation as a complex dimension of the crisis, which weakens Italy in the face of deception and lies. From another perspective, the Spanish leader understands that citizens must have

some kind of informational competence in the use of media to carefully, and as an act of civism, seek reliable means of information to reduce uncertainty and break the chains of fake news transmission.

In Italy, as observed by Falcone and Sapienza[28], behaviors were associated with the trust citizens had in their institutions. After consulting 4,260 Italian citizens, researchers found optimistic results as science was considered to have an important role after the outbreak of COVID-19, referring to the fact that Italians started to scrutinize government actions in a judicious way by seeking and checking information.

These authors[28] concluded that the Italians' information-seeking behavior were fundamental for these citizens to sacrifice themselves in order to comply with the sanitary regulations – despite the emotional burden resulting, above all, from the strict social isolation in this country at some stages of the pandemic.

Informational chaos and governmental actions in Latin American countries

Five articles[29-33] address government actions in American countries, namely Peru, Dominican Republic, Ecuador and Brazil. *Table 3* summarizes the main results in the Latin American countries comprised in the research corpus.

Table 3. Actions to control disinformation on COVID-19 in Latin America

Actions	Countries
Regulation, Criminalization and Sanctions: prison, fines, account closure.	Peru
Establishment of official communication channels on social media sites, such as the Government Information page on Facebook or the official page of the Ministry of Health.	Dominican Republic
Standardization of diagnostic and treatment procedures to face medical prescriptions without scientific basis.	Dominican Republic
Campaigns against fake news, with publication, rectification and clarification.	Peru
Digital network approaches – partnering with Facebook and Twitter to identify and remove news and accounts.	Peru
Ministry of Health daily communication with the media.	Dominican Republic
Educational actions – inclusion of preventive health measures in primary and secondary school curricula [...] promoting health literacy in schools	Peru
Degradation of government communicative action.	Ecuador and Brazil
Dissemination of false information fueled political dissent.	Brazil
Central government hinders access to scientifically based information and promotes false information.	Brazil
Lack of guidelines for the population on how to react or what to believe allowed the spread of fake news.	Brazil
Carries out official communication in disagreement with the WHO guidelines.	Brazil
Actions ignore the danger of COVID-9 crisis to public health, leading to a nationwide spread of the epidemic.	Brazil

Source: Own elaboration.

Peru, a presidential republic, adopted in the first 10 days of the pandemic strict isolation rules, a national lockdown, and the organization of an official website conceptually aligned with other international websites was able to identify the significant amount of 500 fake news about COVID-19[29]. According to the authors, there was a large dissemination of fake news and rumors due to illiteracy and free time as a result of COVID-19 lockdowns, in addition to low health information.

The authors report that in March 2020, a journalist alarmed the population with the prediction that there would be 125,000 deaths in the country which was quickly shared on social networks as well as the false announcement that the minister of economy and the president had caught the disease. Thereafter, the Peruvian government started to publish summaries of fake news on the website 'COVID-19 Peru Manual', similar to some websites in other countries. In addition, the Ministry of Justice and Human Rights announced punitive measures with prison sentences from two to four years for those who spread fake news and three to six years if the news caused panic, and created the hashtag *'Não espalhe #notícias falsas'* (Don't spread #fakenews).

Peru also introduced in Latin America the imposition of prison sentences for those producing and disseminating fake news. According to Alvarez-Risco et al.[29], the governmental initiatives were successful and resulted in a drastic reduction of fake news. The authors mention several efforts by social media and other technology companies which have been developed in other countries to contain infodemic such as Twitter's willingness to delete accounts spreading fake news; as well as eBay and Amazon's efforts also willing to delete messages with "offers of products marketed as miracle cures"[29(584)]. Furthermore, they highlight:

[...] a proposal to include preventive health measures in the curricula of elementary and secondary education [...] the promotion of health literacy in schools [...][29(584)].

In the Dominican Republic, a representative democracy regime, the political scenario was an important factor to understand how the population behaved during the pandemic. According to Tapia[30], distrust in public institutions increased due to the lack of a clear explanation for the electoral crisis. The ministry of health held a series of morning press conferences to keep the public informed about the pandemic, providing recommendations for medical staff and the general public. The Dominican government has invested in radio, social media, and television advertisements to inform the population about the best preventive behaviors and assist in identifying symptoms[30].

In addition, the Ministry of Health launched the 'National Diagnosis and Treatment Protocol for COVID-19' to ensure standardization of procedures for diagnosis, caring, and prevention after a report pointed out that doctors were prescribing treatment and prophylaxis with regimens such as hydroxychloroquine and ivermectin based on fake news rather than the guidelines of local health authorities[30]. The author states that all the quick actions taken by the Dominican Republic government were not enough to regain the population's trust and prevent the rapid spread of fake news because in the face of growing distrust in public institutions, communication were needed from universities which could translates science into terms that could be understood and accessible to the public to increase interest. It would also be necessary to commit to solutions and the academic community could take over, for instance, the different social media platforms to 'silence' misinformed individuals[30].

In Ecuador, a representative democracy, Luque et al.[31] addressed the power of social media to produce and spread fake news.

To do so they used Twitter as an element of analysis as it contributed to disseminate news with catastrophic features, especially from the city of Guayaquil. The resignation of the Minister of Health and the adoption of policies considered retrograde involving the dismissal of health professionals and the termination of the health agreement with Cuba, also dismissing Cuban doctors in 2019, a year before the pandemic, sowed the distrust of public opinion in Ecuador[31].

In a troubled political context, the political group led by President Rafael Correia was accused of running a fake news campaign to destabilize the existing government. Luque et al.[31] mention researches conducted on tweets with the hashtag *#BastaDeNoticiasFalsas* (#EnoughFakeNews), as well as fake news, evidencing that in both national and global media Twitter stories had a direct impact and were reproduced or rewritten as reports or new posts. Feedback between Twitter and the different media stories was found converged[31]. As a result, the authors state that the impact of the events quickly resulted in the degradation of the government's communication actions.

Attempts to divert public attention or remain silent were not enough for the government to neutralize fake news, especially in the case related to the events in Guayaquil.

In Brazil, a presidential republic, in the context of an ultra-right-wing government, Henriques and Vasconcelos[32] identify a deep crisis of confidence in Brazilian institutions and indicate that the dissemination of fake news contributed to its production in addition to making it more concrete. The authors point to the rejection of institutions specialized in the production and dissemination of technical and scientific knowledge by valuing religious and other popular leaders and attacking national and international organizations to discredit them. They also claim that misinformation fuels political

divergence and it is confounded with the federal government's own decision to make access to information more difficult. And that infodemic implies disorientation of people making them lose the ability to recognize reliable sources and content becoming predisposed to accept what corresponds to the values or beliefs disseminated by fake news[32].

Analyzing the same reality, Ribeiro and Leist[33] point out governmental discrepancies in handling the COVID-19 pandemic in Brazil. According to the authors, the lack of guidelines for the population on how to react or what to believe allowed the spread of fake news. They also point out that since the outbreak of the COVID-19 pandemic, Brazil has carried out official communication in disagreement with WHO guidelines, and its policies ignored the danger of the COVID-19 crisis to public health leading to a spread of SARS-CoV-2 throughout the country·

The authors used data on literacy and schooling of Brazilians in which about 30% of the population aged between 15 and 64 years are functionally illiterate which would explain the population's difficulty to interpret information related to COVID-19, especially when there is dissemination of conflicting messages, as observed. As measures to be taken, they suggest the promotion of government campaigns with clear guidelines throughout the country, in simple language, using information based on scientific evidence.

Discussion

Evidence indicates differences and even inequalities in governmental actions toward the problem of disinformation in the context of the COVID-19 pandemic, which reflect the degree of social cohesion, leadership, and institutional trust existing in each of those realities. In other words, the coercive force employed by some

government regimes acted upon confusing, contradictory, and conflicting information leaving populations vulnerable to manipulation by social group interests and unprotected from the disease.

In 2018, a report by the European Union's commission on monitoring and resolving actions[34] to counter disinformation made recommendations to control this phenomenon – the disinformation crisis. It proposed at least four principles to guide the initiatives of nation-states, organizations, businesses, and citizens:

> [...] transparency so that citizens have clear information about news sources and funding; diversity of information online and offline because this feeds critical thinking; credibility of information must be obvious to citizens; and inclusiveness as there can be no long-term sustainable solution without the commitment of all parties involved[34(5)].

Likewise, a report on disinformation and its consequences regarding the COVID-19 pandemic produced by the United Nations Educational, Scientific and Cultural Organization (UNESCO)[35] points out at least 'nine main themes of the infodemic' which should be object of reflection and resolution actions: 1) origins and spread of the coronavirus/COVID-19 disease; 2) false and misleading statistics; 3) economic impacts; 4) discrediting journalists and reliable media; 5) medical sciences: symptoms, diagnosis and treatment; 6) impacts on society and the environment; 7) politicization of technical-scientific actions; 8) content driven by fraudulent financial gain across the media, especially through the internet; 9) focus on disinformation celebrities – social actors (individuals, social groups, and institutions) who use their public influence to add to disinformation.

However, such principles and guidelines were not enough to manage an infodemic since, if internally within each nation it is already difficult to articulate efforts, initiatives organized collaboratively between countries are even rarer in order to draw up strategies and develop coordinated actions developed systematically – especially after the outbreak of the COVID-19 pandemic.

The reviewed literature shows that countries with existing regulatory mechanisms such as China, Vietnam, and Malaysia relied on this facilitating factor to adopt more effective control methods. Initiatives to regulate digital communication and the criminalization of disinformation took place in several countries (China, Peru, Vietnam, India, Malaysia, Ukraine) implying information control and sanctions for individuals propagating disinformation. The effectiveness, advantages, and limitations of these initiatives should be the subject of future studies.

In any case, in countries with a large technological park, strong governance, and community vigilance combined with citizen participation and the intelligent use of big data and digital technologies such as China, the results seem to have been more favorable despite criticism about the loss of freedom of speech, especially when there was an attempt to prevent/censor publication of news about coronavirus without government authorization (India, China).

Furthermore, the infodemic has stimulated government actions to use technology so to bring government and citizens closer (Vietnam, Malaysia) by establishing official communication channels on social networking websites such as the government information on Facebook or the official ministry of health website (Vietnam, Malaysia, Dominican Republic, India). In addition, with the effective use of information technology to report about the risk of infection, disease symptoms, prevention measures in high-risk areas (Vietnam), and the standardization of diagnostic and treatment procedures to counteract unscientific medical prescriptions such as in the

Dominican Republic where the ministry of health's daily communication with the media was also installed.

Actions have been taken to monitor and verify fake news (Malaysia) creation of fake news rebuttal platforms (China, Malaysia), as well as campaigns against fake news with publication, rectification, and clarification (China, India, Peru); and digital networking approaches in partnership with Facebook and Twitter to identify and remove news and accounts (China, Peru); and educational measures such as the inclusion of health protection actions in primary and secondary school curricula and promoting health literacy in schools (Peru).

In India, attention was drawn to the enforcement of the Disaster Management Act to block the internet in the country for three weeks in order to contain panic. The government continued its strategy of shutting down the internet in parts of the country to stop the circulation of disinformation and hate messages, evidencing the urgency and unpreparedness of the government to deal with disinformation during the pandemic.

European countries stand out for seeking to develop strategies to regain government trust with citizens by hiring scientists to guide the production of knowledge for institutional intervention (Spain) or resorting to government leaders to build trust and credibility of information on COVID-19.

It is in Latin America, especially Ecuador and Brazil, where the degradation of the government's communicative actions was found, especially in Brazil where the spread of fake news fueled political divergence; the government made it difficult to access scientifically based information and promoted false information; there was a lack of guidelines for the population on how to react or what to believe; official communication was carried out in disagreement with the WHO guidelines. The actions ignored the danger of the COVID-19 crisis to public health leading to the spread of SARS-CoV-2

throughout the country and giving rise to the lack of control of the pandemic and the emergence of new strains of the virus – these problems are also associated with the disinformation crisis that has plagued the country.

Despite the Brazilian government's attitude, some actions were taken from other segments of society to restrain the informational disorder. Verification agencies were created to investigate complaints and reduce the reach of web pages such as 'Aos fatos' (To the facts), which created a chatbot – Robô Fátima (@fatimabt) – to check news in Messenger and WhatsApp; in addition to Google and Twitter actions to track links of false or distorted news. According to Spinelli and Ramos[7], by the end of July 2018, before the pandemic, 196 pages and 87 profiles that violated the social networks authenticity policies had already been removed, many were linked to MBL, Movimento Brasil Livre (Free Brazil Movement), a Brazilian right-wing conservative and economically liberal movement founded in 2014.

However, governmental actions to control the spread of fake news in society could have mitigated the effects of the pandemic starting with greater population adherence to protection and prevention measures as well as a better ability to confront anti-vaccine movements. Taking into account the structure and capillarity of the Unified Health System (SUS), and the significant acceptance by the Brazilian population of children immunization from their birth, the country could have reached better levels in dealing with the sanitary crisis caused by the pandemic.

Therefore, it can be stated that, although the countries show distinct political contexts, with different socioeconomic and cultural characteristics, the disinformation and the health crisis imposed by COVID-19 pandemic affected societies worldwide contributing to leverage social and political crises.

Final considerations

This study brings a first approach to the phenomenon of disinformation based on a review of scientific literature in a given period. Certainly, the searches carried out were not enough to include all the scientific literature on the subject produced in the year 2020, since in the period this article was being written, other articles were found in simple searches on Google. However, it has been decided to keep the research corpus originally systematized, considered sufficient for a first reading of the subject.

The study suggests the need to deepen the analysis and broaden bibliographical searches to include more recent periods as well as to compare these results with documents and other records of governmental actions which may enrich the research findings, including other countries and continents, since the studies were restricted to the mentioned countries.

The analysis of a complex object requires a multi, inter or transdisciplinary approach which means looking at its various angles under the perspectives of different fields of knowledge. In this review, although a technicist view of information, education, and communication about risk, health, and disease predominates in society, the political dimension that emerged as a central element to understand the drivers of disinformation and infodemic on COVID-19 globally is evident and indicates the need to better understand the relationships between government regimes and disinformation control actions as well as the society's actions and reactions.

Collaborators

Santos MLR (0000-0001-7340-3132)* contributed to the conception and planning; analysis and interpretation of data; drafting, critical review of the content, and approval of the final version of the manuscript. Paim MC (0000-0002-3065-2144)* contributed to the analysis and interpretation of the data; drafting, critical review of the content, and approval of the final version of the manuscript. Soares CLM (0000-0002-8131-4831)*, Santos DM (0000-0001-6985-7094)*, Sande RS (0000-0002-3427-1971)*, and Santos GRM (0000-0003-2203-2225)* contributed to the interpretation of data; drafting, critical revision of the content, and approval of the final version of the manuscript. ∎

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