

Policy responses from countries with the highest number of COVID-19 deaths in the world: a scoping review

Respostas políticas de países com o maior número de mortes por COVID-19 no mundo: uma revisão de escopo

Respuestas de política de países con el mayor número de muertes por COVID-19 en el mundo: una revisión de alcance

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Abstract

The COVID-19 pandemic has been declared since March 11, 2020. Until December 2020, the absence of specific treatments or vaccines for COVID-19 implied the need to use non-pharmacological strategies to reduce infection rates. This study aimed to track and compare the policy responses of countries with the highest number of COVID-19 deaths in the world. Was performed a scoping search in five databases (PubMed, Scopus, LILACS, Web of Science and Google Scholar) between December 1, 2019 and April 30, 2020. Information on policy and health on official websites of the listed countries was also searched. After the selection process, which was carried out independently by two evaluators following the previously established criteria, 55 titles were included. Of the 18 documents of national health societies, 13 addressed the prevention of COVID-19. The most reported country was Italy (17). The strategies most cited by the studies are: traveler monitoring, international travel controls, social distancing orders, closure schools and universities, partial and total lockdown. Until the end of April, all countries evaluated, United States, Italy, the United Kingdom, Spain, France, Belgium, Germany, Iran, Brazil and the Netherlands, have adopted measures such as social distancing orders and the closure of schools and universities. Except for Iran, all these countries have adopted some type of lockdown. So far (August, 2022), Germany has already been cited as an example of a successful country in controlling the pandemic, while the United States still has the highest numbers in the world in total cases, total deaths and new deaths weekly from COVID-19.

Keywords: COVID-19; Coronavirus infections; Pandemics; Public health; Health policy.

Resumo

A pandemia de COVID-19 foi declarada em 11 de Março de 2020. Até dezembro de 2020, a ausência de tratamentos ou vacinas específicas para COVID-19 implicou na necessidade de utilização de estratégias não farmacológicas para redução das taxas de infecção. Este estudo teve como objetivo rastrear e comparar as respostas políticas dos países com o maior número de mortes por COVID-19 no mundo. Realizamos uma busca de escopo em cinco bases de dados

(PubMed, Scopus, LILACS, Web of Science e Google acadêmico) entre 1º de Dezembro de 2019 e 30 de Abril de 2020. Também foram pesquisadas informações em sites oficiais dos países listados, sobre políticas e saúde. Após o processo de seleção, que foi realizado independentemente por dois avaliadores seguindo os critérios previamente estabelecidos, 55 títulos foram incluídos. Dos 18 documentos das sociedades nacionais de saúde, 13 abordaram a prevenção da COVID-19. O país mais relatado foi a Itália (17). As estratégias mais citadas pelos estudos foram: monitoramento de viajantes, controles de viagens internacionais, ordens de distanciamento social, fechamento de escolas e universidades, bloqueio parcial e total. Até o final de Abril, todos os países avaliados, Estados Unidos, Itália, Reino Unido, Espanha, França, Bélgica, Alemanha, Irã, Brasil e Holanda, adotaram medidas como ordens de distanciamento social e fechamento de escolas e universidades. Com exceção do Irã, todos esses países adotaram algum bloqueio. Até o momento (Agosto de 2022), a Alemanha já foi citada como exemplo de país bem-sucedido no controle da pandemia, enquanto os Estados Unidos ainda apresentam os maiores números do mundo em total de casos, total de óbitos e novas mortes semanais por COVID-19.

Palavras-chave: COVID-19; Infecções por coronavírus; Pandemias; Saúde pública; Política de saúde.

Resumen

La pandemia de COVID-19 fue declarada el 11 de marzo de 2020. Hasta diciembre de 2020, la ausencia de tratamientos o vacunas específicas para COVID-19 implicó la necesidad de utilizar estrategias no farmacológicas para reducir las tasas de infección. Este estudio tuvo como objetivo rastrear y comparar las respuestas políticas de los países con el mayor número de muertes por COVID-19 en el mundo. Realizamos una búsqueda de alcance en cinco bases de datos (PubMed, Scopus, LILACS, Web of Science y Google Scholar) entre el 1 de diciembre de 2019 y el 30 de abril de 2020. También se buscó información sobre políticas y salud en los sitios web oficiales de los países enumerados. Tras el proceso de selección, que se llevó a cabo de forma independiente por dos evaluadores siguiendo los criterios previamente establecidos, se incluyeron 55 títulos. De los 18 documentos de las sociedades nacionales de salud, 13 abordaron la prevención de la COVID-19. El país más informado fue Italia (17). Las estrategias más citadas por los estudios fueron: monitoreo de viajeros, controles de viajes internacionales, órdenes de distanciamiento social, cierre de escuelas y universidades, bloqueo parcial y total. A fine de abril, todos los países evaluados, Estados Unidos, Italia, Reino Unido, España, Francia, Bélgica, Alemania, Irán, Brasil y Holanda, habían adoptado medidas como órdenes de distanciamiento social y cierre de escuelas y universidades. A excepción de Irán, todos estos países han adoptado algún tipo de bloqueo. Hasta el momento (Agosto de 2022), Alemania ya ha sido citada como ejemplo de país exitoso en el control de la pandemia, mientras que Estados Unidos aún tiene las cifras más altas del mundo en casos totales, muertes totales y nuevas muertes semanales por contagios de COVID-19.

Palabras clave: COVID-19; Infecciones por coronavirus; Pandemias; Salud pública; Política de salud.

1. Introduction

The first severe acute respiratory syndrome coronavirus (SARS-CoV) epidemic occurred between 2002 and 2003, and in late 2019 SARS-CoV-2 appeared, causing COVID-19. This virus has high transmissibility and in contact with the human organism has a variety of symptoms, including acute respiratory syndromes that can progress to respiratory failure (WHO, 2022a). COVID-19 was declared a pandemic on March 11, 2020 and is being considered as the most severe in the last hundred years, because, in addition to the high number of deaths, it has had significant economic consequences, which requires analysis of the interrelationships between health and economic productivity (Lv et al., 2020; Ferreira Junior & Santa Rita, 2020). Until April 30, 2020, SARS-CoV-2 had been responsible for 3,090,445 confirmed cases of COVID-19 in 179 countries around the world, and 217,769 deaths (WHO, 2020a).

Currently, the number of confirmed cases of COVID-19 worldwide is 599,071,265, and the number of deaths exceeds 6,467,023 (30 August 2022, World Health Organization). Among the countries with the highest number of deaths are the United States of America (1,033,207), Brazil (683,494), and India (527,829) (30 August 2022, World Health Organization) (WHO, 2022a). Worldwide, there was an absence of effective strategic plans, since it is a new respiratory disease that causes a large number of hospitalizations and admissions to intensive care units. The evolution of COVID-19 has followed different patterns in each country, and this may be related to the type of strategies employed, the reaction time of each country, the capabilities of health services, and the levels of adherence of countries' populations to the rules established to control the spread of the disease, as well as a number of other possible factors (Bulut & Kato, 2020). An example is the case of Brazil, where the fight against the pandemic ran into obstacles such as lack of basic sanitation, limited access to health services and

quality education, in addition to mistaken actions or omissions by the public authorities and the widespread dissemination of misinformation about the disease, which contributed to an increase in the number of cases, and a weakening of the health system (Araújo et al., 2021).

By December 2020, the absence of specific treatments or vaccines for COVID-19 has increased the need to use non-pharmacological strategies to reduce contact rates among the population, and, therefore, reduce the transmission of the virus. As of 18 February 2021, at least seven different vaccines for emergency use against COVID-19 have been rolled out in countries, and, less than four months later, the number of people vaccinated has surpassed that of infected people, a record time for manufacturing and application in human history. Vulnerable populations in all countries are the highest priority for vaccination. Although vaccines are a critical new tool in the battle against COVID-19, it is important to note that the search for vaccines for COVID-19, so far, is focused on controlling symptoms and not protecting against infections. In view of this, The World Health Organization recommends that national and local authorities should continue to strengthen existing disease control activities (WHO, 2022a; Nascimento Júnior et al., 2021).

While many countries worldwide are currently experiencing a decline in overall SARS-CoV-2 infections, likely because of the vaccines and the public health and social measures implemented, an increased number of reports of variants have been noted in several countries. On 26 November 2021, one more variant was classified as a variant of concern by the WHO, Omicron. In less than a month after this designation, the Omicron variant had been identified in 110 countries. This fifth variant of concern is highly divergent from the others, with a high number of mutations, including 26-32 mutations in the spike protein, some of which may be associated with the potential for humoral immune escape and increased transmissibility. The potential for virus mutation increases with the frequency of human and animal infections (WHO, 2022a). Therefore, reducing transmission of SARS-CoV-2 by using established disease control methods as well as avoiding introductions to animal populations, are critical aspects to the global strategy to reduce the occurrence of mutations that have negative public health implications (WHO, 2022a; Borges et al., 2022).

Since the beginning of the COVID-19 outbreak, countries around the world followed contingency plans that put in place different measures according to the analysis of the severity of the pandemic and the recommendations made by WHO, as well as the Centers for Disease Control and Prevention in the United States and other organizations (WHO, 2022a). Among the main strategies to mitigate the risks of contamination are distancing or social isolation, the use of masks, and clean hand hygiene (WHO, 2022a; Nascimento Júnior et al., 2021; Borges et al., 2022). In view of the immense dimension and impact that the COVID-19 pandemic has had, in addition to recurring waves of increases in cases and deaths in several countries, it is important that there are studies with information on the wide range of measures taken by governments during the COVID-19 epidemic, to support government decision-making on strategies to deal with other waves of COVID-19 cases arising from new variants of the coronavirus or even to deal with other public health emergencies. Therefore, this study aimed to conduct a scoping review to track and compare the political responses of countries with the highest number of COVID-19 deaths in the world.

2. Methodology

2.1 Study design

The question that guided the review was: "What strategies have been taken to combat COVID-19 in different countries?". The countries chosen were the ten that had the highest number of deaths from COVID-19 by April 30, this information was obtained from the daily reports of the WHO (WHO, 2020a). The protocol for this review was not registered formally because scoping reviews are not accepted by the International Prospective Register of Systematic Reviews. However,

this scoping review was conducted following the methodological framework suggested by Arksey and O'Malley (2005), as well as the recommendations by Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-SCR) (Tricco et al., 2018). The following five steps were taken to conduct this scoping review: 1) identify the research question and search strategies, 2) identify all possibly relevant studies, 3) select studies that match the inclusion criteria of the review, 4) extract the data, 5) summarize and report the results.

2.2 Search strategy

A methodical search was carried out through the databases: PubMed, Scopus, LILACS, Web of Science and Google scholar on 01 May 2020, using a combination of controlled vocabulary - Medical Subject Headings (MeSH) and key word terms (Data S1). The PICOS strategy was used to determine the words that would be used in the search (Figure S1) (Santos et al., 2007). In addition, we also searched the official websites of the United States (<https://www.defense.gov/Explore/Spotlight/Coronavirus/DOD-Response-Timeline/>), Italy (<http://www.governo.it/it/coronavirus-misure-del-governo>), Spain (www.mschs.gob.es/buscador/iniciar.do?search=@estrategias%20%20@%20COVID-19) and (<https://www.lamoncloa.gob.es/covid-19/>), France (<https://www.gouvernement.fr/info-coronavirus/les-actions-du-gouvernement>), the United Kingdom (<https://www.gov.uk/government/news/dhsc-and%20phe-statement-on-coronavirus>), Belgium (<https://www.info-coronavirus.be/en/news/>), Germany (https://www.rki.de/EN/Home/homepage_node.html) (<https://www.deutschland.de/en/news/german-federal-governmentinforms-about-the-corona-crisis>), Iran (<http://irangov.ir/cat/509>), Brazil (<http://portal.anvisa.gov.br/>) (<https://www.saude.gov.br/noticias>), the Netherlands (<https://www.government.nl/topics/coronavirus-covid-19/news>), the WHO (<https://www.who.int/>), and (<https://ourworldindata.org/>).

2.3 Inclusion and exclusion criteria

Were included journal articles, guidelines, official government documents, technical reports, technical notes, research support, practical guidance, legislation and consensus development conferences, published in English, Spanish or Portuguese between December 1, 2019 and 30 April 2020, from governments and health professional associations as long as they contain actions to combat COVID-19 nationwide from countries that had the highest number of deaths from COVID-19 by April 30. Were excluded reviews, comments, letters, book chapters, correspondence, editorials, opinions, and articles where we failed to access the full text despite contacting the authors.

2.4 Article selection and data extraction

The selection process was performed in three steps: 1) the exclusion of duplicate articles; 2) screening of titles and abstract, and 3) screening of full texts. The studies were independently selected by two evaluators (ATC) and (RFF) any disagreements were resolved by a third evaluator (CIBW). To assist in this process, we used the Rayyan tool (Ouzzani et al., 2016). The following information was then extracted independently by the two evaluators (ATC and RFF) from the included material: country, population, date of the first case of COVID-19, number of people infected with COVID-19, number of COVID-19 deaths, total tests performed for the diagnosis of COVID-19, the strategies used to combat COVID-19, the aim of the strategy, and details of when the main measures to combat COVID-19 were enacted in each country.

Based on the main research objectives, the findings were classified into two research domains: official government strategies, and strategies of national health professional associations. All data and results in this review are based on published

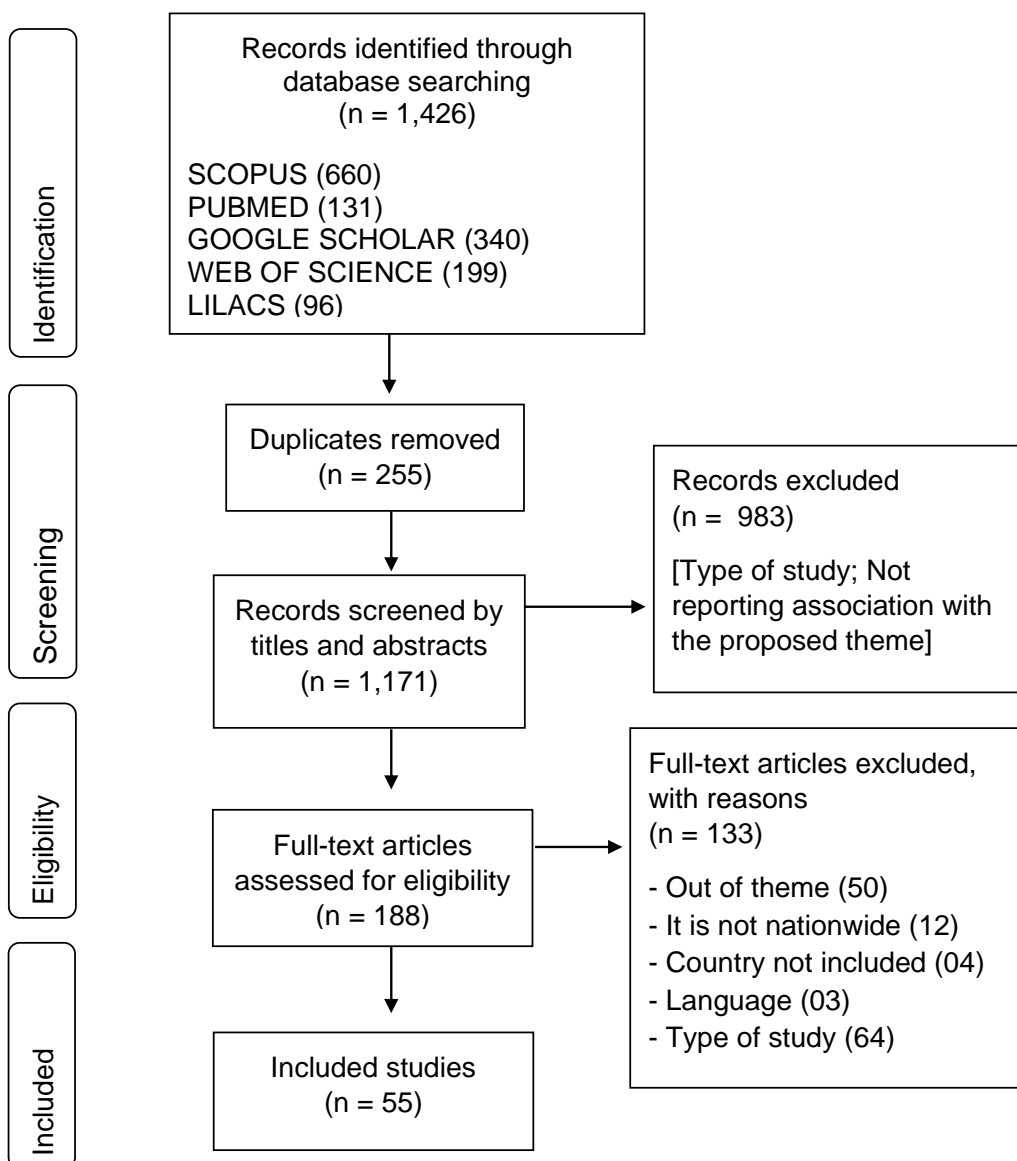
information as listed in the references.

3. Results

3.1 Search results

The database search identified 1,426 articles (PubMed, Scopus, LILACS, Web of Science and Google scholar databases). After examining titles and abstracts, 188 articles were selected for a full text reading, after which a further 133 texts were excluded. The reasons for their exclusion are summarized in supplementary material (Table S1). A total of 55 articles were included in the review. All the steps of the selection process are described in Figure 1.

Figure 1. Study flow diagram.



Source: Authors.

3.2 Characteristics of included studies

Of the 55 included documents the greatest number were from Italy (17), followed by Brazil (11), France (9), the United States (7), the United Kingdom (4), Spain (4), Iran (3) and Germany (2). Some documents included more than one country. Regarding the type of material, documents from national health professional associations were the most common (18), followed by journal articles (17). Were broadly characterized the other types of material into six categories: Reports (7), notes (6), guidelines (2), contingency plans (2), practical guides (2), protocols (1). The complete list of the material and their characteristics is shown in supplementary material (Table S2).

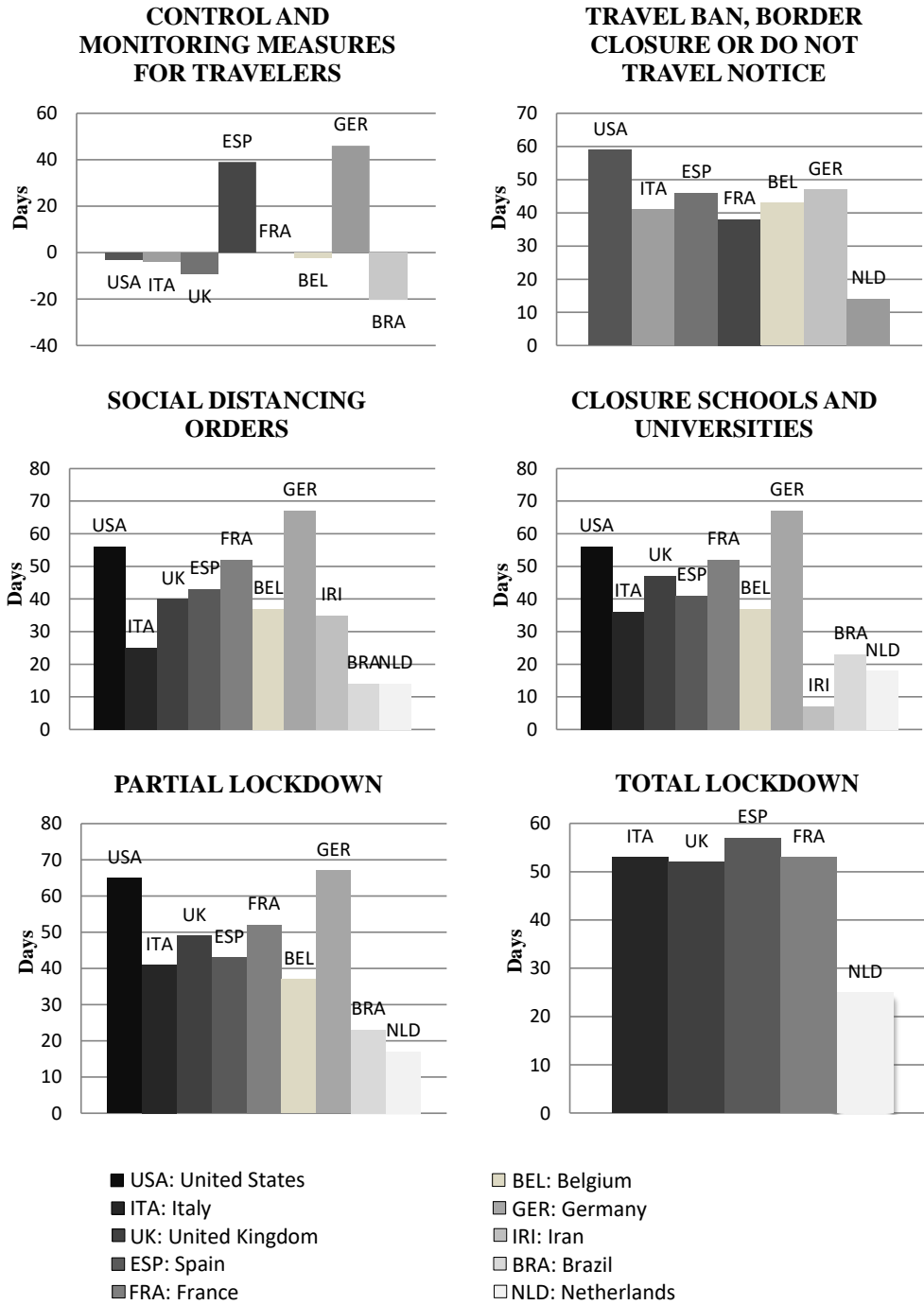
3.3 Official government strategies

A total of 37 documents reported official government strategies. The strategies of Belgium and the Netherlands were extracted only from the official websites, as none of the material identified in the database search reported on these countries. Among the strategies, the most cited in the material identified are: traveler monitoring, international travel controls, social distancing orders, closure of schools and universities, and partial and total lockdown (Patel & Jernigan, 2020; Jernigan, 2020; Signorelli et al., 2020; Brogi et al., 2020; Sanchez-Caballero et al., 2020; Almohammed et al., 2020; Shvetsova et al., 2020; Barbarossa et al., 2020; Croda et al., 2020; Ghanchi, 2020; Raoofi et al., 2020; Saez et al., 2020; Stoecklin et al., 2020; Bittencourt, 2020; Rafael et al., 2020; Martelloni & Martelloni, 2020; Briscese et al., 2020; Wangping et al., 2020; Supino et al., 2020; Sebastiani et al., 2020; Domenico et al., 2020; Olfatifar et al., 2020; Chintalapudi et al., 2020; Amos, 2020). The graph in Figure 2 shows how long it took each country to take the main measures after the first detected case of COVID-19 in the country. The situation of COVID-19 in each country, represented by the number of infected, the number of dead, and the number of diagnostic tests is presented in Table 1. A timeline of the official government strategies of each country is presented in supplementary material (Table S3).

3.4 Strategies of national health professional associations

Of the 18 documents from national health professional associations, six were guidelines, four were recommendations, three were guidance, two were consensus, one was a contingency plan, one was a position paper and one a current perspective. Thirteen addressed the prevention of COVID-19 infection, two addressed management, one addressed diagnostic, one addressed prevention and management, and one addressed diagnostics, treatment and prevention. Most of the health service publications were from Italy, and the most common field of medicine was oncology (Akladios et al., 2020; Barbareschi et al., 2020; Donders et al., 2020; SFSCMFCO, 2020; Kennedy et al., 2020; Fineschi et al., 2020; Coimbra et al., 2020; Boldrini et al., 2020; Fakhry et al., 2020; Sorbello et al., 2020; Van de Voorde et al., 2020; Choi et al., 2020; Starace & Ferrara, 2020; Rubin et al., 2020; Schultz et al., 2020; Rascado Sedes et al., 2020; Davanzo et al., 2020; Indini et al., 2020). The complete list of these documents, with aim, date of publication, country and major measures, is presented in supplementary material (Table S4).

Figure 2. Number of days between first detected case of COVID-19 and implementation of measures in each country.



Source: Authors.

Table 1. Data for the countries with the highest number of COVID-19 deaths until April 30, 2020.

Country (Population)	First case of COVID-19 (Ritchie et al., 2020)	COVID-19 data in April 30, 2020 and COVID-19 data in August 30, 2022				
		Total deaths (WHO, 2020a; WHO, 2022a)	Total infected (WHO, 2020a; WHO, 2022a)	Total tests per thousand inhabitants (Ritchie et al., 2020)	Total tests by confirmed case (Ritchie et al., 2020)	Number and share of people fully vaccinated (Ritchie et al., 2020)
United States (322,180,000)	January 20	52,428 1,033,207	1,003,974 92,953,791	18.979 2,708.53*	8.052 7.2*	- 223.91 million (67.44%)
Italy (59,430,000)	January 29	27,682 175,407	203,591 21,814,856	32.735 3,796.00*	24.552 4.9*	- 47.96 million (80.96%)
United Kingdom (65,789,000)	January 31	26,097 187,761	165,225 23,493,327	10.125 7,480.12*	8.244 30.6*	- 50.65 million (75.28%)
Spain (46,348,000)	January 31	24,275 112,454	212,917 13,332,976	28.898 1,961.85*	27.363 3.2*	- 40.63 million (85.56%)
France (64,721,000)	January 24	24,054 150,451	127,066 33,466,622	11.101 4,126.75*	13.228 4.4*	- 53.03 million (78.66%)
Belgium (11,358,000)	February 4	7,501 32,516	47,859 4,482,315	26.735 2,955.33*	19.031 3.8*	- 9.15 million (78.87%)
Germany (81,915,000)	January 28	6,288 147,223	159,119 32,095,854	29.202 1,574.02*	30.948 2.4*	- 63.43 million (76.05%)
Iran (80,277,000)	February 19	5,957 143,776	93,657 7,525,628	5.516 594.49*	9.632 129.0*	- **
Brazil (207,653,000)	February 26	5,017 683,494	71,886 34,384,747	0.623 330.91*	1.953 **	- 171.37 million (80.07%)
Netherlands (16,987,000)	February 27	4,711 22,598	38,802 8,383,824	12.239 1,753.39*	8.313 1.5*	- 11.96 million (68.36%)

* Data not updated for more than a month; ** Information not available. Source: Authors.

4. Discussion

In this study, the response of the countries that had the highest number of deaths by COVID-19 until April 30 were evaluated, to understand which policies can be effective in controlling a pandemic. Seven of these countries are in Europe, two in the Americas and one in Asia (WHO, 2020a).

4.1 Official government strategies

All countries evaluated (United States, Italy, the United Kingdom, Spain, France, Belgium, Germany, Iran, Brazil and the Netherlands) adopted measures such as social distancing orders and the closure of schools and universities. Other important measures, such as travel and traveler control and lockdown, were not adopted by all these countries until the end of April. This may have been one of the causes of the worsening of the COVID-19 outbreak in these countries, as the evidence suggests that the most important interventions in respect of reducing the spread of the virus may be the closure of borders, case detection procedures at airports, and the closure of schools and daycare centers. The United States, Italy, the United Kingdom, France, Belgium and Brazil took measures to monitor and control travelers even before the first case of COVID-19 was detected in the country. More restrictive measures such as border closures and travel bans were taken by the United States, Italy, Spain, France, Belgium, Germany and the Netherlands (Patel & Jernigan, 2020; Jernigan, 2020; Signorelli et al., 2020; Brogi et al., 2020; Sanchez-Caballero et al., 2020; Almohammed et al., 2020; Shvetsova et al., 2020; Barbarossa et al., 2020;

Croda et al., 2020; Ghanchi, 2020; Raoofi et al., 2020; Saez et al., 2020; Stoecklin et al., 2020; Bittencourt, 2020; Rafael et al., 2020; Martelloni & Martelloni, 2020; Briscese et al., 2020; Wangping et al., 2020; Supino et al., 2020; Sebastiani et al., 2020; Domenico et al., 2020; Olfatifar et al., 2020; Chintalapudi et al., 2020; Amos, 2020; DOD, 2020; Governo Italiano, 2020; Government United Kingdom, 2020; Gobierno de España, 2020a; Gobierno de España, 2020b; Gouvernement France, 2020; Belgian Government, 2020; Robert Koch Institute, 2020; Deutschland.de, 2020; Government of the Islamic Republic of Iran, 2020; Brasil, 2020a; Brasil, 2020b; Government of the Netherlands, 2020; Patiño et al., 2020).

After the virus is circulating in the country, so-called community transmission, studies show that transmission will continue to occur, unless the most stringent community quarantine measures are taken in a lockdown environment, which means the almost complete cessation of all community activities. However, a partial lockdown can still flatten the outbreak curve compared to no lockdown (Sjödin et al, 2020; Andrade et al., 2021). The United States, Germany, Belgium and Brazil adopted partial lockdowns, while Italy, the United Kingdom, Spain, France and the Netherlands adopted a total lockdown, maintaining only essential services and controlling the circulation of the public outside their homes. According to our findings, Iran was the only one of the ten countries studied that did not adopt any type of lockdown until the end of April. In addition to these measures, some countries, such as Spain, Belgium and Iran, distributed protective masks to the community at large. Other countries, such as France and Germany, did not distribute masks to the community, but they did run campaigns recommending their use (Signorelli et al., 2020; Brogi et al., 2020; Sanchez-Caballero et al., 2020; Almohammed et al., 2020; Shvetsova et al., 2020; Barbarossa et al., 2020; Ghanchi, 2020; Raoofi et al., 2020; Saez et al., 2020; Bittencourt, 2020; Martelloni & Martelloni, 2020; Briscese et al., 2020; Wangping et al., 2020; Supino et al., 2020; Sebastiani et al., 2020; Domenico et al., 2020; Olfatifar et al., 2020; Chintalapudi et al., 2020; Amos, 2020; DOD, 2020; Governo Italiano, 2020; Government United Kingdom, 2020; Gobierno de España, 2020a; Gobierno de España, 2020b; Gouvernement France, 2020; Belgian Government, 2020; Robert Koch Institute, 2020; Deutschland.de, 2020; Government of the Islamic Republic of Iran, 2020; Brasil, 2020a; Brasil, 2020b; Government of the Netherlands, 2020).

As significant as knowing what measures were taken by each country is knowing how long it took to respond. Based on the historical patterns of influenza pandemics and the specifics of the SARS-CoV-2 transmission dynamics, non-pharmacological measures should be implemented quickly (within one week of the first case being identified) and adapted to respond to changes in epidemiology and, to the extent that it is possible, minimize social and economic disruption (Vital Strategies, 2020). In the specific case of the COVID-19 pandemic, the evidence to date indicates that the level of social distancing practiced in most countries was too little, or too late, to detectably reduce mortality due to COVID-19. The lack of effective reduction in infection rates could have been beneficial if it resulted in a large part of the population becoming naturally immune, a herd immunity (Santorelli Junior et al., 2022).

In this study, it was found that some countries implemented measures within the first few days of detecting the first case, or even before the detection. Other countries took more than 40 days to implement drastic measures of social distancing. Among the ten countries included, the Netherlands and Brazil had the fastest responses in respect of the main measures, and Germany took longer to act (Robert Koch Institute, 2020; Deutschland.de, 2020; Brasil, 2020a; Brasil, 2020b; Government of the Netherlands, 2020). However, Germany was more successful than Brazil in controlling COVID-19 cases and deaths. The agility of Brazil and the Netherlands may have been influenced by having the other countries as an example, since they were the last countries to have a confirmed case of COVID-19, having more time and more information to act.

It is important to emphasize that real knowledge about the situation of the pandemic and the impact of the measures is totally related to the performance of diagnostic tests. Confirmation of a case is based on a test. The number of confirmed cases shows the progress of the pandemic in each country. Without data, it is not possible to respond adequately to the threat, just as

there would be no way to understand whether measures are working (Anderson et al., 2020; Ritchie et al., 2020). With limited testing capacity, changing testing strategies and different surveillance and reporting systems, the officially reported mortality statistics based on individual COVID-19 death reports will inevitably be heterogeneous and incomplete (Andrade et al., 2021). In addition, if mass population testing measures were rigorously adopted, people identified with the disease could be isolated and thus prevent the spread of the virus, reducing contagion (Alves & Silvino, 2021). Among the countries studied, Italy, Spain and Germany performed more COVID-19 diagnostic tests, both per thousand inhabitants and per confirmed case, while Brazil, Iran and the United Kingdom performed less (Ritchie et al., 2020).

Concerning the impact of the measures, studies show large reductions in transmission of the disease, and the avoidance of a greater number of deaths through these combined non-pharmaceutical interventions, especially lockdown and social distancing (Anderson et al., 2020; Flaxman et al., 2020). In a study of 11 European countries, the reduction in reproduction of transmission after the interventions was approximately 82% compared to the values prior to the interventions, and the number of deaths avoided up to May 4 was estimated to be between 2,800,000 and 3,500,000. Among the measures, lockdown showed the greatest identifiable impact on transmission, a reduction of between 75% and 87%, consequently resulting in fewer deaths (Flaxman et al., 2020).

Currently (August, 2022), among the countries studied, Germany has already been cited as an example of a successful country in controlling the pandemic, as it demonstrated success in preventing, detecting, containing and treating COVID-19. Despite having recently struggled to keep track of the number of cases and deaths, overall Germany still did well in relation to most of the most affected countries, for a long time it managed to reduce the number of confirmed cases at the same time in which the proportion of tests for confirmed cases has increased, and has had a good rate of population vaccination. On the other hand, unfortunately, the United States has the world's largest number of new weekly deaths, total accumulated cases and total accumulated deaths from COVID-19. Furthermore, among the ten countries studied, the United States has the lowest rate of fully vaccinated population. Worldwide, five of the countries studied are still among the ten countries with the highest number of total deaths from COVID-19: The United States, Brazil, the United Kingdom, Italy and France. The highest number of new weekly deaths were reported from the United States of America (2,714), Japan (1,624), Brazil (1,105), Italy (677), and Australia (490) (Ritchie et al., 2020; WHO, 2022b).

Despite having this data, as the pandemic is still ongoing and with the direct and indirect consequences caused by the measures taken by each country still happening, it is still too early to say which countries took the most effective measures. In addition, according to the WHO, each category of public health and social measures that countries can decide to implement, including physical distancing, isolation and restricted movement and special protective measures should be selected, adapted and implemented based on the local intensity of transmission of COVID-19, taking into account their viability, sustainability and acceptability in the local context. However, what is most important is that the measures are revised as the pandemic evolves and more and more is known about this new virus (WHO, 2020b). In addition, the effectiveness of any single measure may be limited, and only a combination of measures may be able to reduce the transmissibility of the disease, the number of deaths, and prevent the collapse of health care services (Patiño et al., 2020).

4.2 Strategies produced by national health professional associations

The rapid evolution of the COVID-19 epidemiological scenario has led to several recommendations, guidelines, guidance, consensus and other documents being produced by different national health professional associations in respect of the prevention, diagnosis and management of COVID-19.

These publications focused more on COVID-19 preventive measures rather than treatments, this can be explained both by the concern about the high transmissibility capacity of the virus, and by the scarcity of concluded studies on treatment possibilities and diagnostic tests, as it is a new disease with a different profile to previous virus outbreaks (Akladios et al., 2020; Barbareschi et al., 2020; SFSCMFCO, 2020; Kennedy et al., 2020; Fineschi et al., 2020; Coimbra et al., 2020; Boldrini et al., 2020; Fakhry et al., 2020; Choi et al., 2020; Starace & Ferrara, 2020; Schultz et al., 2020; Davanzo et al., 2020; Indini et al., 2020; WHO, 2020b).

Following the COVID-19 outbreak in Europe, Italy was among the first affected countries, which may explain why the highest number of publications were from this country. In addition, the largest number of publications were in the field of oncology (Akladios et al., 2020; Barbareschi et al., 2020; Fineschi et al., 2020; Boldrini et al., 2020; Fakhry et al., 2020; Sorbello et al., 2020; Van de Voorde et al., 2020; Starace & Ferrara, 2020; Davanzo et al., 2020; Indini et al., 2020). This may be explained by the fact that cancer patients are one of the main risk groups in respect of increased mortality due to COVID-19. Health professional associations play an important role in advancing the quality of health care, developing documents that shape clinical practice, and the dissemination of information, especially during a pandemic, in which many medical services have been postponed or reduced to address only urgent cases (Lv et al., 2020; WHO, 2020b). In this perspective, it is important that studies now focus on the diagnosis and treatment of the disease, as there are already a large number of studies on prevention.

5. Conclusion

By the end of April, measures such as social distancing orders and the closure of schools and universities had been adopted by all the ten countries that had the highest number of deaths from COVID-19. Monitoring and control of travelers were adopted by the United States, Italy, the United Kingdom, France, Belgium, Brazil, Germany and Spain. Border closures and travel bans were implemented by the United States, Italy, Spain, France, Belgium, Germany and the Netherlands. Partial lockdowns were introduced by the United States, Germany, Belgium and Brazil. Total lockdowns were introduced by Italy, the United Kingdom, Spain, France and the Netherlands. The distribution of protective masks to the community was carried out by Spain, Belgium and Iran. Campaigns recommending the use of masks were carried out by France and Germany. The highest proportions of diagnostic tests performed were in Italy, Spain and Germany. So far (August, 2022), Germany has already been cited as an example of a successful country in controlling the pandemic, while the United States still has the highest numbers in the world in total cases, total deaths and new deaths weekly from COVID-19.

Finally, it is important to clarify that this study was carried out with the pandemic still in progress and with the direct and indirect consequences caused by the measures taken by each country still happening, thus making it difficult to discuss which countries took the most effective measures. In addition, it is highlighted that the adoption of policies at the subnational level (such as state or municipal) probably play an important role, but they are not addressed here, thus being a suggestion for future studies on this topic.

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