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RESEARCH ARTICLE

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THE CURRENT RELEVANCE OF VACCINATION FOR COVID-19, INFLUENZA, POLIOMYELITIS, MEASLES AND SMALLPOX

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ABSTRACT

Objective: The study's main purpose was to determine the significance and impact of COVID-19, Poliomyelitis, Influenza, Measles, and Smallpox vaccination in contemporary times. **Methods:** An integrative literature review was performed using a 5-year longitudinal approach (2017-2022) in the following databases: Google Scholar, CAPES Periodicals, MEDLINE from the Virtual Health Library, PUBMED, Scielo, and LILACS. The search was conducted using the following descriptors: Vaccination/Prevention/COVID-19/Poliomyelitis/Influenza/Measles/Smallpox/ Vaccination Coverage/ Epidemiology. **Results:** 12 articles were selected for this review. Upon analyzing the chosen articles, it is apparent that comprehending the historical context surrounding the emergence of COVID-19, Poliomyelitis, Influenza, Measles, and Smallpox is of paramount importance. Moreover, having knowledge of the most affected areas, risk groups, and coping strategies is crucial to efficiently organize the implementation of vaccination to safeguard the population from these diseases. **Final considerations:** The findings of this study have demonstrated the magnitude of vaccination as a mechanism for promoting good health and controlling epidemics during various historical periods. Furthermore, this research aims to emphasize the National Immunization Program's constructive and pertinent function in enhancing the quality of life for the population by preventing diseases through vaccination.

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INTRODUCTION

Vaccination has been a much-discussed and debated topic in recent times due to the COVID-19 pandemic, which has global relevance. According to ARROYO *et al.* (2020), immunization is the most cost-effective intervention for global control of infectious diseases, saving countless lives, reducing mortality and global incidence of preventable diseases. Despite that, studies have shown a decline in vaccination coverage rates in recent years, resulting in the resurgence of previously controlled vaccine-preventable diseases such as Smallpox, Measles, and Poliomyelitis. The purpose of this research is to investigate and evaluate the significance and impact of COVID-19, Poliomyelitis, Influenza, Measles, and Smallpox vaccination in modern times. As well as, to demonstrate the relevance of vaccination as the most effective health promotion strategy for vaccine-preventable diseases and the control of virus circulation in general. From this perspective, it is well known that Brazil has a rich history of immunization spanning over 200 years. In 1973, the Brazilian Health Ministry launched the National Immunization Program [Programa Nacional de Imunização (PNI)], which implemented

various public policies and actions aimed at promoting vaccination throughout the country (Min. Saúde PNI, 2003). According to MARTINS *et al.* (2019), the PNI has been highly effective in monitoring vaccine-preventable diseases and providing quality vaccines to the population in a preventive manner. Therefore, vaccination campaigns must be carefully planned and executed by health authorities, with clear and objective information provided to convince society to receive the vaccine voluntarily and freely. Numerous studies have shown that vaccination is the most effective technique for combating the spread of various viruses.

METHODS

This study used a 5-year longitudinal approach to collect data at regular intervals, enabling a temporal analysis of the investigated phenomena. It is an integrative literature review that utilized articles published in databases from August 2017 to August 2022. The research question was developed using the PICO strategy, as outlined in Table 1. PICO stands for Patient, Intervention, Comparison, and Outcome (Min. Saúde, 2021). The formulated research question is: "What is the current impact and importance of COVID-19, Poliomyelitis, Influenza, Measles, and Smallpox vaccination?"

Table 1. Description of the PICO strategy

Definition	Description
Patient	General Population and Population from the Minas Gerais State (Brazil)
Intervention	Impact of vaccination on the national framework
Comparison	Impact of non-vaccination on the national framework
Outcome	Improvements in vaccine metrics

RESULTS

Through a comprehensive search for descriptors in cited databases, a total of 3,629 articles were retrieved. Out of these, 130 bibliographies were selected for abstract reading after examining their titles. Further scrutiny led to the identification of 25 papers for the full study. Conclusively, after a rigorous evaluation process, 11 articles were deemed eligible for supporting this integrative literature review and for discussions on the subject matter. These findings are clearly depicted in the flowchart presented in Figure 1.

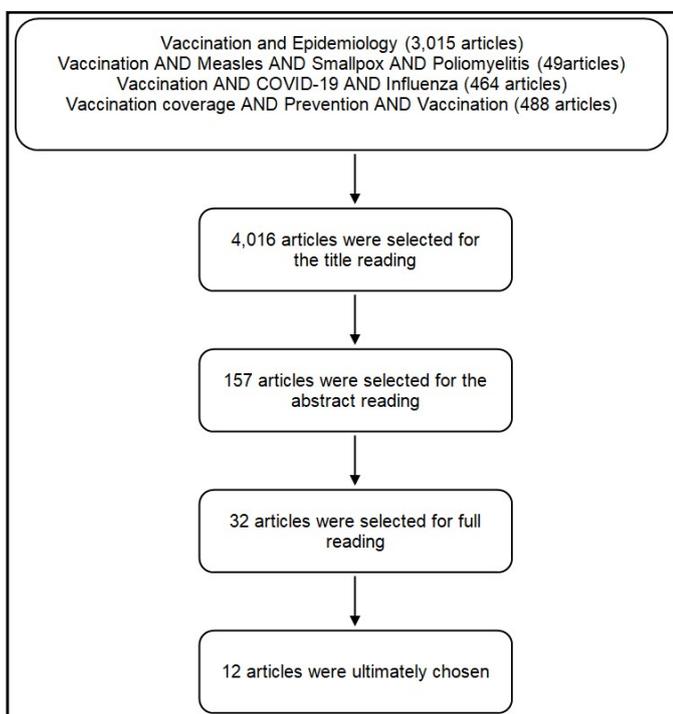


Figure 1. Flowchart showing the articles' selection process used in this integrative review, according to both inclusion and exclusion criteria

Among the 12 articles selected and included here, 8% were published in 2019, 25% in 2020, 25% in 2021, and 42% in 2022. In total, 3 English-based articles were chosen, which were published in different countries such as the United States of America and Brazil, therefore, underscoring the relevance of vaccination studies and their prominence and impact in the current framework. Table 2 was formulated to support this integrative review containing the following information as proposed by BRASIL, MS2021: title, authorship, year of publication, nationality, language, and methodology. Table 3 addresses discussions regarding the main topics of the evaluated studies based on the following informations: authorship, title, professional affiliations of the study participants, research objectives, and key findings.

DISCUSSION

Immunization is the most cost-effective intervention for global control of infectious diseases, saving countless lives, reducing mortality, and preventing worldwide incidence of preventable

diseases (ARROYO *et al.*, 2020). Brazil has a history of more than 200 years of immunizations, with the National Immunization Program [*Programa Nacional de Imunização (PNI)*] launched in 1973 by its Ministry of Health, implementing actions and public policies to promote vaccination in the country. Various strategies, campaigns, and blockades eradicated Yellow Fever in the 1940s, Smallpox in 1973, Poliomyelitis in 1989, Measles in 2016 (Min. Saúde. PNI, 2003). Moreover, they assisted in controlling neonatal and accidental Tetanus, Diphtheria, Pertussis, severe forms of Tuberculosis, and recently, COVID-19. According to GARCIA *et al.* (2020), immunization is considered one of the ways to achieve health equity, which is a fundamental principle of the Brazilian National Health System [*Sistema Único de Saúde (SUS)*]. Immunization is recognized as the most effective method to prevent immunizable diseases and improve health indicators. Nowadays, the *PNI* has achieved significant success in monitoring immunizable diseases and strives to offer high-quality vaccines to the population as a preventive measure (MARTINS *et al.*, 2019). The present decline in vaccination coverage in Brazil can be attributed to the recent spread of fake news, a false sense of security resulting from the eradication of certain diseases, and concerns regarding potential adverse reactions. According to data from the Brazilian Health Ministry up to October 22th, 2022, none of the vaccines on the national schedule reached the *PNI*'s recommended indicators.

In addition to the aforementioned factors, the decline in vaccination coverage can also be attributed to anti-vaccine movements. Historically, the first immunization campaign was organized by Oswaldo Cruz to control the outbreak of Smallpox in the then capital of Brazil, *Rio de Janeiro*. Notwithstanding, the mandatory administration of the vaccine to the population provoked dissatisfaction and rebellion due to perceived infringement of individual liberties and lack of information about the vaccine. This resulted in the Vaccine Revolt, a popular uprising that occurred in November 1904 in *Rio de Janeiro* city and marked the onset of vaccine refusal in Brazil (GUGEL *et al.*, 2021). In the 1970s, a vaccine that contained the Smallpox virus was developed and ultimately led to the eradication of human Smallpox after causing the deaths of millions throughout history. However, the scientific community remains concerned about the possible resurgence of Smallpox, particularly due to the potential for its use as a biological weapon. Conversely, Monkeypox, caused by the *Poxviridae* virus family, has recently spread beyond the African continent and become a global concern. Fortunately, the availability of existing vaccine stocks, the ease of large-scale production expansion, and the genotypic and phenotypic similarity between the Human Smallpox virus and Monkeypox virus allow for the use of the same vaccine to confer cross-protection against Monkeypox virus infections and mitigate the impact of its global spread (KREUTZ *et al.*, 2022). Following the Smallpox Eradication Campaign, the Brazilian public health system has gained considerable experience in immunization and epidemiological surveillance, which has been acknowledged by the World Health Organization (WHO) for the disease's elimination. As a consequence, Brazil has developed a logistical and technical infrastructure, distributed among Federal, State, and municipal entities, that has been utilized to implement various programs such as the National Poliomyelitis Control Plan. With the successful implementation of these campaigns, Brazil was granted certification in 1994 for the interruption of wild poliovirus transmission, leading to the complete eradication of poliomyelitis from the country (Min. Saúde. PNI, 2003). The Brazilian Health Ministry's poliomyelitis vaccination campaign has set a goal of maintaining a vaccine coverage rate of 95% to prevent virus reintroduction and preserve the disease's elimination status. Despite progress made in Brazil, poliomyelitis continues to be endemic in certain countries, including Afghanistan, Nigeria, Pakistan, and others that pose a risk. (FRANCO *et al.*, 2020). There is currently concern about the reintroduction of wild poliovirus in the country due to low vaccination coverage. Data extracted from Tabnet DATA *SUS* confirms this, revealing a decline in poliomyelitis vaccination coverage in Brazil in recent years, with vaccination rates of 89%, 84%, 76%, and 70% in the years 2018 to 2021, respectively.

Table 2. The studies selected for this integrative review are presented in accordance with the following criteria: title, authorship, year of publication, nationality, language, and methodology

Nr.	Title	Authorship	Year	Country	Language	Journal	Methodology
1	<i>A importância da imunização: Revisão Integrativa</i>	MARTINS et al.	2019	Brazil	Portuguese	<i>Revista de Iniciação Científica e Extensão - REIcEn</i>	Integrative Review
2	<i>A importância da vacinação no combate ao sarampo</i>	GARCIA et al.	2020	Brazil	Portuguese	Brazilian Journal of Health Review	Original Article
3	<i>Áreas com queda da cobertura vacinal para BCG, poliomielite e triplice viral no Brasil (2006-2016): mapas da heterogeneidade regional</i>	ARROYO et al.	2020	Brazil	Portuguese	<i>Cadernos de Saúde Pública (CSP)</i>	Original Article
4	<i>Causas da queda progressiva das taxas de vacinação da poliomielite no Brasil</i>	FRANCO et al.	2020	Brazil	Portuguese	Brazilian Journal of Health Review	Original Article
5	COVID-19 Vaccination and Intent for Vaccination of Adults With Reported Medical Conditions	LU et al.	2022	United States of America	English	American Journal of Preventive Medicine	Research Article
6	Impact of Low Rates of Influenza on Next-Season Influenza Infections	KRAULAND et al.	2022	United States of America	English	American Journal of Preventive Medicine	Research Article
7	Influenza Vaccination Coverage Among Medicare Fee-for-Service Beneficiaries	TSAI et al.	2022	United States of America	English	American Journal of Preventive Medicine	Research Article
8	<i>Maior mortalidade durante a pandemia de COVID-19 em áreas socialmente vulneráveis em Belo Horizonte: implicações para a priorização da vacinação</i>	PASSOS et al.	2021	Brazil	Portuguese	<i>Revista Brasileira de Epidemiologia</i>	Special Article
9	<i>Percepções acerca da importância da vacinação e da recusa vacinal: uma revisão bibliográfica</i>	GUGEL et al.	2021	Brazil	Portuguese	Brazilian Journal of Development	Bibliographic Review
10	<i>Perfil epidemiológico das ocorrências de sarampo no Brasil durante os últimos 5 anos</i>	WANDERLEY et al.	2021	Brazil	Portuguese	Brazilian Journal of Development	Original Article
11	<i>Perfil epidemiológico e vacinal de casos suspeitos de sarampo em municípios da macrorregião de saúde norte de Minas Gerais, Brasil</i>	RODRIGUES et al.	2022	Brazil	Portuguese	Research, Society and Development	Original Article
12	<i>Variola dos macacos (Monkeypox virus – Poxviridae): Uma breve revisão</i>	KREUTZ et al.	2022	Brazil	Portuguese	<i>Ars Veterinaria</i>	Literature Review

Table 3. The studies selected for this integrative review are presented in accordance with the following criteria: authorship, title, professional affiliations of the study participants, research objectives, and key findings

Title	Vaccine	Research Objectives	Conclusions
<i>A importância da imunização: Revisão Integrativa</i>	Influenza, Smallpox and Poliomyelitis	To analyze and synthesize results of independent studies on immunization, thus providing insights that could potentially enhance the quality of care offered to patients.	Vaccination is widely acknowledged as having excellent safety and cost-effectiveness. This intervention provides individual protection while also offering collective immunity, making it an essential component and an obligatory intervention that is frequently included in health care programs.
<i>A importância da vacinação no combate ao sarampo</i>	Measles	To elucidate the significance of vaccination as the primary public health approach to mitigate the transmission of the virus	The principal public health strategy to mitigate the spread of the measles virus, which may cause complications and fatalities, is the administration of the measles vaccine.
<i>Áreas com queda da cobertura vacinal para BCG, poliomielite e triplice viral no Brasil (2006-2016): mapas da heterogeneidade regional</i>	BCG (Bacillus Calmette-Guérin), Poliomyelitis and MMR (Measles, Mumps and Rubella)	To identify and highlight regions in Brazil that experienced a decline in BCG, poliomyelitis, and MMR vaccination coverage. There were collected information on the number of children immunized with these three vaccines up to one year of age between 2006 and 2016, for each Brazilian municipality.	Based on the PNI's records, the decrease in immunization rates across Brazilian municipalities is uneven and represents a phenomenon of inequality, as confirmed by national research. Nevertheless, this is not a singular occurrence in Brazil, and it necessitates the implementation of innovative management strategies to promote and monitor vaccine coverage.
<i>Causas da queda progressiva das taxas de vacinação da poliomielite no Brasil</i>	Poliomyelitis	To perform a cross-sectional study that includes spatial analysis of poliomyelitis vaccination coverage in Brazil in the year 2018, as well as to correlate the results with variables such as education, HDI, health care, and internet access.	Countries with the highest levels of education and good access to health services had the lowest vaccination rates. The decrease in vaccination coverage can lead to severe consequences, including frequent outbreaks of vaccine-preventable diseases and the risk of reintroducing the wild poliomyelitis virus in Brazil.
COVID-19 Vaccination and Intent for Vaccination of Adults With Reported Medical Conditions	COVID-19	To assess COVID-19 vaccination rates among adults with reported medical conditions in the United States of America.	Individuals who have pre-existing medical conditions such as cardiovascular and kidney problems, among others, are advised to receive the COVID-19 vaccine. This recommendation is based on the fact that most individuals who require hospitalization due to COVID-19 have one or more underlying medical conditions.
Impact of Low Rates of Influenza on Next-Season Influenza Infections	Influenza	To characterize the effect of diminishing social distancing measures and decreasing antibody rates, which result from COVID-19 vaccination, on the efficacy of flu immunization.	Although vaccination is an effective means of preventing influenza, it does not guarantee complete immunity. However, vaccination rates tend to fall below the optimal levels.

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Influenza Vaccination Coverage Among Medicare Fee-for-Service Beneficiaries	Influenza	To assess the agreement between self-reported and healthcare activation-based measures of influenza vaccination coverage, as well as to investigate disparities in vaccination rates across the United States of America.	As per the research findings, self-reported influenza vaccination had a sensitivity of 98.7% and a specificity of 57.4%. It is noted that influenza vaccination is the most effective preventive measure to safeguard against infection.
<i>Maior mortalidade durante a pandemia de COVID-19 em áreas socialmente vulneráveis em Belo Horizonte: implicações para a priorização da vacinação</i>	COVID-19	To evaluate mortality rates in <i>Belo Horizonte</i> city, <i>Minas Gerais</i> State, during the COVID-19 pandemic based on social vulnerability, following a vaccination strategy.	Research conducted both in Brazil and globally has indicated that the impact of the COVID-19 pandemic on society has been unequal. It has been observed that individuals with higher social vulnerability have experienced higher rates of contagion, aggravation, and mortality. This finding is consistent with a study carried out in <i>Belo Horizonte</i> city.
<i>Percepções acerca da importância da vacinação e da recusa vacinal: uma revisão bibliográfica</i>	Measles, Smallpox, Poliomyelitis and MMR (Measles, Mumps and Rubella)	To examine the significance of vaccination and the factors that contribute to vaccine hesitancy among the population.	In a culturally diverse country like Brazil, it is imperative for health authorities to exercise prudence when conducting vaccination campaigns, as information dissemination must be transparent and unambiguous to persuade the population to both voluntarily and safely receive vaccines.
<i>Perfil epidemiológico das ocorrências de sarampo no Brasil durante os últimos 5 anos</i>	Measles	To ascertain the epidemiological features of confirmed measles cases in Brazil between 2015 and 2019, such as the regions most affected, gender, ethnicity, age group, and the number of deaths.	The primary and most effective approach to controlling measles is vaccination, which requires achieving 95% coverage. To enhance adherence to vaccination campaigns and prevent imported cases, it is essential for public authorities, healthcare professionals, and the population to reflect on the importance of measles control measures and the need for further research on the subject.
<i>Perfil epidemiológico e vacinal de casos suspeitos de sarampo em municípios da macrorregião de saúde norte de Minas Gerais, Brasil</i>	Measles	To assess the vaccine and epidemiological profile of suspected measles cases in municipalities located in the Northern region of <i>Minas Gerais</i> State. The investigation focused on examining the relationship between vaccination status, symptomatology, and hospitalization rates.	The primary strategy for controlling measles is routine vaccination within the basic healthcare network, as well as the implementation of vaccine blockades, intensification efforts, and vaccination campaigns. Through this study, it was possible to gain insight into the functioning of detection, notification, and investigation processes. Moreover, to identify issues related to the Measles Epidemiological Surveillance System across various levels of management within the <i>Minas Gerais</i> State.
<i>Variola dos macacos (Monkeypox virus – Poxviridae): Uma breve revisão</i>	Smallpox	To provide context to the infection and swift transmission of Monkeypox Virus in humans by characterizing its historical and epidemiological aspects.	It is recommended that individuals infected with Monkeypox practice social isolation to prevent further transmission of the disease. Moreover, given the genotypic and phenotypic similarities between Monkeypox and Smallpox, administering a vaccine containing Smallpox can provide cross-protection against Monkeypox infection and effectively mitigate the global spread of the virus.

As per the current data, the Brazilian Health Ministry has been deliberating strategies to increase the adoption of vaccination against Poliomyelitis in the country, by taking into consideration both global and regional situations. Therefore, the Technical Advisory Group (TAG) of the Pan American Health Organization (PAHO) recommends altering the first booster of Oral Poliomyelitis Vaccine (OPV) to Inactivated Poliomyelitis Vaccine (IPV), containing Poliovirus in laboratories, and conducting environmental surveillance of poliomyelitis (Min. Saúde, 2022). Measles, caused by the Morbillivirus genus of the *Paramyxoviridae* family, is another disease that has made its mark in Brazilian history. It affects the respiratory tract of the infected individual, becoming systemic, and is transmitted through contact with the nasopharyngeal secretions of the virus carrier, making it highly contagious. In fact, a single person can transmit it to 90% of nearby unvaccinated individuals (GARCIA *et al.*, 2020). Measles has caused around 2.6 million deaths annually worldwide and approximately 101.8 thousand deaths in the Americas during the 1970s. A study on the effectiveness of Measles elimination in Latin America and the Caribbean found that vaccination prevented 3.2 million cases and 16 thousand deaths in the region in the last two decades. Since 1968, Measles has been a compulsorily notifiable disease in Brazil. The implementation of the Measles Elimination Plan in the 2000s led to low morbidity and mortality rates for the disease. Thanks to the high efficacy rates achieved under the coordination of the Brazilian Health Ministry and the expansion of vaccination strategies through the *PNI*, Measles was eradicated in Brazil in 2016 (Min. Saúde, 2022).

Despite this, there was a 300% increase in reported cases of measles worldwide in 2019 compared to 2018, with the WHO reporting 112,163 cases in 170 countries as of March 2019. Brazil experienced a measles outbreak during the same period, with 2,753 cases reported nationwide from June to August 2019, with 2,708 cases in *São Paulo* State alone. According to GARCIA *et al.* (2020), the main factors responsible for the outbreaks in Brazil since 2018 include Venezuelan migration to the country, strong anti-vaccination movements, and decreased demand for measles vaccine. In 2020, 21 Brazilian States reported measles cases, with five States showing active virus circulation. According to WANDERLEY *et al.* (2021), vaccination campaigns in the Northern region exhibit low adherence, whereas contamination still persists in the Southeastern region, despite higher indicators. Thus, while vaccination campaigns are lacking in one region of the country, in another, foreign immigration might cause the virus to recirculate. Vaccination campaigns represent a valuable differential for reducing severe cases and deaths. As noted by GARCIA *et al.* (2020), there is no specific antiviral treatment for measles in modern times, and vaccination is the most effective public health method to prevent the virus's spread, complications, and fatalities. RODRIGUES *et al.* (2022) support the primary strategy for measles control being vaccination, with a target of reaching 95% of the population and ensuring homogeneous vaccine coverage. In 1999, the *PNI* began vaccinating people over 65 years old against influenza, which was extended to people over 60 in the 2000s and continues to be done to date (Min. Saúde, 2003).

Although vaccination is an effective method of preventing the flu, immunization rates are typically below ideal and do not offer complete immunity to infection, requiring annual boosters (KRAULAND et al., 2022). This study underscores that influenza vaccination is the most effective strategy for preventing infection. Herein, it was found that self-reported influenza vaccination had a sensitivity of 98.7% and a specificity of 57.4%. It is essential to accurately determine influenza vaccination coverage to help public health authorities identify high-risk populations and geographic areas with low coverage. Disparities in sex, race, ethnicity, and rural population were observed to have lower influenza vaccination rates, according to the research conducted by TSAI et al. (2022). Furthermore, KRAULAND et al. (2022) reported that vaccination significantly reduced the risk of contracting influenza, with a 10% increase in vaccination rates leading to a 31.5% decrease in cases and a 32.9% drop in hospitalizations. A 20% increase in vaccination caused a 45.5% reduction in cases and a 47.4% reduction in hospitalizations. It was concluded that the vaccine reduced the incidence of influenza but did not eliminate the influenza virus strains. Despite the effectiveness of the influenza vaccine, some studies have shown that lack of information, fear, beliefs, myths, and distrust regarding its efficacy are the primary reasons for non-vaccination. Additionally, the lack of vaccine availability is also reported as one of the main reasons for low vaccination coverage in health units, which can significantly hinder achieving child vaccine coverage (MARTINS et al., 2019). COVID-19 is an acute respiratory infection caused by the SARS-CoV-2 coronavirus, which is a betacoronavirus with a high potential for worsening, high transmissibility, and global presence. The virus was first identified in December 2019 among patients with pneumonia of unknown origin in Wuhan, China (Min. Saúde, 2021). Brazil has one of the highest numbers of COVID-19 cases and deaths globally, and even with a mortality rate from COVID-19 underreported by at least 20%, it is negatively distinguished in the international arena. In 2021 and 2022, the distribution of COVID-19 vaccines was limited by suppliers. During this difficult period of vaccine shortage, criteria were established to prioritize the target population in groups considered at risk and prioritized, and logistics were organized to implement vaccination for the Brazilian population while optimizing existing resources (PASSOS et al., 2021).

Studies conducted in Brazil and worldwide have demonstrated that the COVID-19 pandemic has had a differential impact on society, with higher rates of contagion, aggravation, and deaths observed among people with greater social vulnerability. The municipality of *Belo Horizonte* recognized the potential health risks that may arise from poor environmental and social conditions, and consequently developed a composite indicator, referred to as the health vulnerability index. This index serves as a tool for the allocation of public policies and resources to the most vulnerable regions within the city (PASSOS et al., 2021). Social and economic inequalities remain the primary underlying factors contributing to the prevalence and distribution of diseases and deaths worldwide. This issue is further exacerbated in *Belo Horizonte* city, where the pandemic has intensified pre-existing disparities. Those residing in socially vulnerable areas are at greater risk of exposure to COVID-19 due to their employment in essential services, limited access to physical distancing and hygiene measures, and inadequate housing and transportation conditions. Moreover, comorbidities such as cardiovascular diseases, diabetes, and obesity are prevalent in populations with poorer socioeconomic conditions and significantly increase the mortality rate of COVID-19. Additionally, disadvantaged individuals have limited access to healthcare services, a gap that has only been amplified by the pandemic. For this reason, it is imperative to prioritize vaccine distribution based on social and economic criteria (PASSOS et al., 2021). Furthermore, Lu et al. (2022) argue that individuals with pre-existing conditions such as cardiovascular disease, diabetes, and renal disease should be given priority in COVID-19 vaccine distribution, as approximately 90% of those hospitalized with COVID-19 had underlying comorbidities. As a final point, it is crucial to note that vaccination campaigns require careful planning and execution by health authorities, and

information must be communicated clearly and objectively to encourage widespread acceptance and participation. As numerous studies have demonstrated, vaccination remains the most effective method for combating the spread of viruses.

CONCLUSIONS

Vaccination represents the most crucial immunization strategy to date with the best cost-benefit ratio, and it is also the most efficient mechanism to mitigate the circulation and spread of viruses for diseases such as COVID-19, Poliomyelitis, Influenza, Measles, and Smallpox. This practice saves numerous lives, reduces the mortality rate, and curtails the global incidence of preventable diseases. Nonetheless, despite these significant benefits, several barriers hinder the necessary coverage for vaccination, preventing them from reaching the optimal percentage. Examples of such difficulties include inadequate information dissemination, the prevalence of anti-vaccine movements, the proliferation of false information, substandard availability of vaccines, geographically-based strategies, education levels, gender, ethnicity, and so on. In this circumstance, there has been a resurgence of previously controlled diseases such as Measles, Poliomyelitis, and Smallpox. The combination of globalization and low vaccination rates further facilitates viral dissemination, as evidenced by the recent COVID-19 pandemic, highlighting the necessity of adhering to the vaccination schedule. In Brazil, the National Immunization Program plays a pivotal role in immunization control, providing various types of vaccines that cater to individuals of all ages, from childhood to old age. The introduction of the COVID-19 vaccine has recently demonstrated the significant importance of vaccination in disease prevention, leading to a reduction in the number of hospitalizations and deaths. This experience mirrors that observed in the country during the smallpox eradication campaign of the 1970s. In conclusion, vaccination represents a form of care that is essential for achieving equity in health, which is one of the fundamental principles of the Brazilian National Health System for promoting and ensuring equal access to this fundamental right throughout the country.

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