The Relationship between the Covid-19 Epidemic and the Drop in Influenza Vaccination Coverage among the Brazilian Population in 2022

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ABSTRACT

Introduction: Vaccination is one of the main means of preventing influenza and reducing harm to the population. However, it should be noted that the COVID-19 epidemic may have influenced the drop in influenza vaccination coverage.

Objective: This study aims to conduct a cross-sectional study on influenza vaccination in Brazil in 2022, characterizing by category, age group and clinical risk category by pathology.

Material and Methods: The work was carried out in the form of a descriptive study with analysis of data obtained from the National Immunization Program Information System - SIPNI, Ministry of Health, Health Surveillance Secretariat and Executive Secretariat in the year 2022.

Results: As shown in the results of this article, the total amount of influenza vaccines administered in 2022 was 62,918,552 million doses (80.72% of the vaccinated population), which is well below the 95% target set by the Ministry of Health and the World Health Organization.

Final considerations: The good indicators of the past must be resumed, thus avoiding the return of infectious diseases that were once eradicated, or in the case of influenza, an increase in the number of deaths resulting from the disease.

KEYWORDS: Vaccination coverage; Influenza; National Immunization Program.

ARTICLE DETAILS

INTRODUCTION

Influenza is a respiratory disease, also known as flu or seasonal influenza due to the influenza viruses types A, B and C. Its great diversity can be observed in an endemic way, occurring at different times, but with variable lethality (TOCHETTO et.al, 2023).

For Huang et.al (2023), it is a viral disease that is among the oldest diseases of civilization, which has affected societies over time in epidemic and pandemic fashion with varying intensities.

According to Nguyen et.al (2023), type A influenza is caused by the H1N1 virus, which is a single-stranded RNA virus capable of undergoing gene mutations, favoring the appearance of various subtypes of this virus. The virus is transmitted from person to person by inhaling respiratory droplets containing infectious viral particles.

Influenza viruses have great potential for outbreaks. These viruses undergo constant adaptive mutations in their receptors that give them the ability to enter other human cells, due to the high adaptive transmissibility of the virus, which can reach a pandemic potential (ANDO et.al, 2023).

According to Holanda et.al (2022), influenza is highly transmissible and affects all ages, especially the elderly.

Influenza A virus (IAV) circulation patterns differ in North and South America, with influenza seasons generally

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characterized by different subtypes and strains. However, South America is relatively undersampled considering the size of its population. In 2016, H1N1 viruses caused a severe influenza epidemic in southern Brazil that spread rapidly (PILLAI, et.al 2023).

Deaths from influenza are also reported in severe forms of the disease (HOLANDA et.al, 2022).

Bett et.al (2022) mentions that the main symptoms resulting from the infection are: high fever, muscle pain, headache, cough and tiredness. Signs and symptoms of influenza can also include nausea or vomiting and diarrhea.

Diagnosis requires culture based on isolation of the virus in pharyngeal and nasal secretions, serological tests, detection of viral antigens (PCR) (AZAMBUJA et al., 2021).

Camargo et.al (2022) carried out a descriptive epidemiological study based on the DATASUS platform data system, in which information was collected on the number of hospitalizations, mortality rate, deaths by age group due to influenza, in Brazil, in the years 2018 to 2020. The results of the data were 2147 hospitalizations due to flu/influenza. These figures represent increases of 29.62% (2018), 74.93% (2019) and 78.2% (2020), and averages of 1656.51 hospitalizations/year. Also according to their analysis, in 2020, the age groups 80 years and over, 70 to 79 years and 60 to 69 years had 428, 329 and 258 deaths respectively, and represented, in that order, increases of 72.85%, 179.6% and 268.57% of deaths due to Influenza.

De Lima et.al (2022), determined the epidemiological profile of the influenza virus in the state of Pernambuco, from 2010 to 2019. According to their results, the majority of those infected were female, with a low number of pregnant women.

Liphaus et.al (2021) observed an increase in the number of notifications of Severe Acute Respiratory Syndrome (SARS) due to influenza in the state of São Paulo in 2021. Due to the increase in the number of cases, guidelines on case management, epidemiological and laboratory surveillance were resumed.

The main treatment is based on the use of antivirals and the main form of prevention is vaccines, distributed during vaccination campaigns (BACURAU et al., 2020).

Vaccination is one of the main means of preventing influenza and reducing harm to the population. In Brazil, it was introduced by the National Immunization Program (PNI) in 1999 through annual campaigns with the aim of vaccinating 70% of the elderly aged 65 and over (AZAMBUJA et al., 2021).Despite the vaccine reducing mortality, influenza still has a major impact on health, with a prevalence of 3 to 5 million serious cases in the at-risk population, which includes pregnant women, the elderly, people with chronic illnesses and nursing mothers (GONZÁLEZ-BLOCK et al., 2022).

Data presented by the Ministry of Health (2023) confirms that vaccination is the most effective form of prevention against influenza and its complications, and is considered one of the most effective measures to avoid serious cases and deaths from influenza. The constant mutation of influenza viruses requires global monitoring and frequent reformulation of the flu vaccine.

Due to the constant mutation of the influenza virus, it is necessary to be vaccinated against the flu every year. Every year, the Ministry of Health carries out the National Flu Vaccination Campaign. This imunobiological product offered by the Unified Health System (SUS) protects against the three influenza virus subtypes that circulated most in the last year in the Southern Hemisphere (BRASIL, 2023).

Araújo et.al (2023) defines ageing as a process that involves complex social, psychological and physiological changes that can have deleterious effects on the immune system. Imunosenescence can be defined as a state of deregulated immune function in the elderly and triggers important clinical consequences such as greater susceptibility to respiratory infections, neoplasms, cardiovascular diseases and reduced vaccine response.

Vaccines prevent infectious diseases and represent the most cost-effective health investment. People's high adherence to the vaccines available through the public health system contributes to a reduction in disease cases with the control and eradication of infectious diseases, as well as reducing virus turnover (BACURAU & FRANCISCO, 2019).

OBJECTIVES

The aim of this study is to carry out a cross-sectional study on Influenza Vaccination in Brazil in 2022, characterizing by category, age group and clinical risk category by pathology.

MATERIAL AND METHODS

The work was carried out in the form of a descriptive study with analysis of data obtained from the National Immunization Program Information System - SIPNI, Ministry of Health, Health Surveillance Secretariat and Executive Secretariat in the year 2022.

The data analyzed can be seen in the epidemiological bulletin for 2022 epidemiological bulletin where they are presented and available on the website:*https://infoms.saude.gov.br/extensions/Influenza_20 21/Influenza_2021.html#*

In the second part, we discuss the latest literature on the subject. The bibliographic research was carried out in sources such as scientific journals and articles available in virtual databases.

The bibliographic survey corresponded to a review characterized by the design of studies conducted with a systematic approach and an objective description of the evidence summarized on the subject.

Articles were found in PubMed, Medline, the Cochrane Database and Google Scholar. After excluding articles that were simultaneously indexed in more than one

database, a textual, thematic and interpretative analysis was carried out.

RESULTS

According to information collected through the National Immunization Program Information System - SIPNI, 79,985,240 million doses of the influenza vaccine were made available in 2022. The target population was 77,940,342 million people. Table 1 shows the number of people vaccinated by age group in 2022.

Table 1. Age Group, Type Of Doses And Number Of Doses Of Influenza Vaccine Administered In 2022.

Age Group	Type of dose	Number of doses
2 a < 5 years	1st Dose	381.735
2 a < 5 years	2nd Dose	236.222
2 a < 5 years	Single dose	4.705.342
5 years	1st Dose	33.059
5 years	2nd Dose	19.801
5 years	Single dose	724.168
6 a < 9 years	1st Dose	62.751
6 a < 9 years	2nd Dose	36.791
6 a < 9 years	Single dose	1.589.581
6 months < 2 years	1st Dose	1.592.972
6 months < 2 years	2nd Dose	1.041.509
6 months < 2 years	Single dose	1.832.987
9 a 19 years	Single dose	4.518.026
20 a 29 years	Single dose	5.179.981
30 a 39 years	Single dose	6.001.297
40 a 49 years	Single dose	6.413.477
50 a 54 years	Single dose	4.055.535
55 a 59 years	Single dose	3.241.416
60 a 64 years	Single dose	5.962.379
65 a 69 years	Single dose	5.093.153
70 a 74 years	Single dose	4.188.501
75 a 79 years	Single dose	2.939.909
80 years and +	Single dose	3.067.960

Source: National Immunization Program Information System - SIPNI, 2022. Brazil, Ministry of Health. Health Surveillance Secretariat. Executive Secretariat.

Graph 1 shows the doses applied by category and age group of the influenza vaccine in 2022.

Graph 1. Doses Applied By Category And Age Group
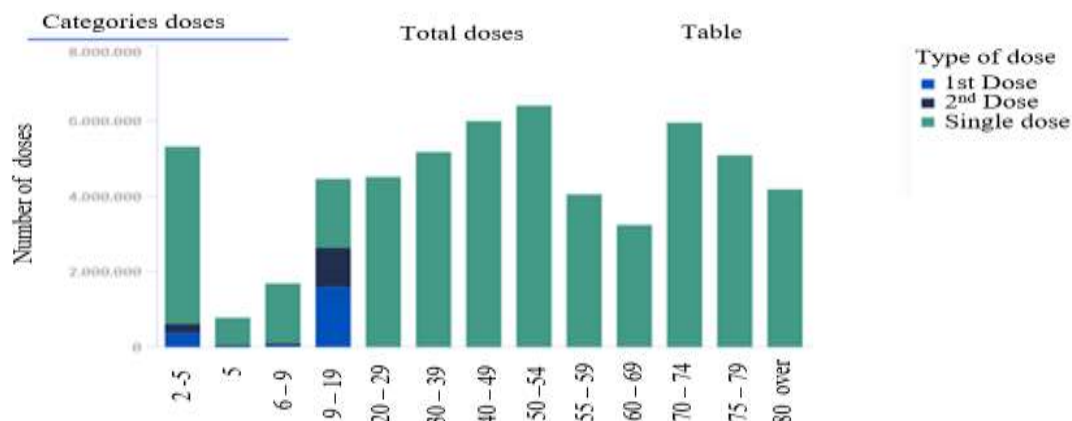
Source: National Immunization Program Information System - SIPNI, 2022. Brazil, Ministry of Health. Health Surveillance Secretariat. Executive Secretariat.

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Table 2 shows influenza vaccination by risk group.
Table 2. Clinical Risk Category

Clinical Risk Category	1st Dose	2nd Dose	Single Dose
Diabetes	1.451	1.049	947.506
Chronic heart disease	900	734	1.077.170
Chronic liver disease	184	146	40.004
Chronic neurological disease	613	353	262.573
Chronic kidney disease	193	143	84.685
Chronic respiratory disease	7.740	4.447	1.535.917
Immunosuppression	647	274	285.434
Obese	582	468	187.848
Transplanted	105	84	20.845
Trisomies	387	290	37.003

Graph 2 shows the doses applied by dose category and clinical risk category.
Graph 2. Doses Applied By Dose Category And Clinical Risk Category.
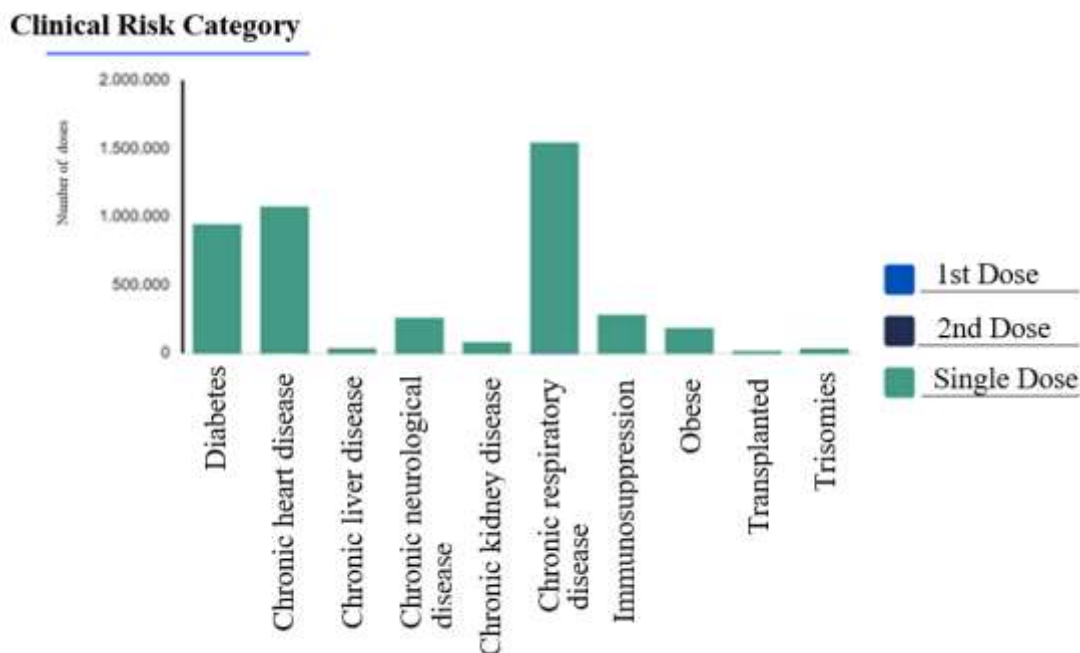
Source: National Immunization Program Information System - SIPNI, 2022. Brazil, Ministry of Health. Health Surveillance Secretariat. Executive Secretariat.

DISCUSSION

As shown in the results of this article, the total amount of influenza vaccines administered in Brazil in 2022 was 62,918,552 million doses (80.72% of the vaccinated population), well below the 95% target set by the Ministry of Health and the World Health Organization.

This corroborates a trend already pointed out in Bernardo's (2019) studies, which frightened health professionals. Seven of the eight mandatory vaccines for

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children did not meet the coverage target, and a reduction in vaccination coverage was observed for almost all the vaccines made available by the Unified Health System (SUS).

The drop in vaccination coverage of immunizers offered by the National Immunization Plan (PNI), which had already been recorded since 2015, became more pronounced during the COVID-19 pandemic, due to the low demand for health services and the concentration of efforts on caring for patients affected by the disease caused by the coronavirus (CRUZ, 2021).

The result is a health scenario that raises concerns about the possibility of outbreaks of previously controlled diseases.

The downward trend in vaccine coverage during the COVID-19 pandemic has been observed in several studies (CAMARGO et.al, 2022).

Procianoy et.al (2022) conducted a study on the impact of the COVID-19 pandemic on the vaccination of children. Analyzing the average of all vaccines in each year, it is possible to note that it was in 2020 that the lowest value of annual average VC was reached, which was only 75.07%, while the highest value recorded was 98.92%, in 2013, and from 2019 to 2020 the drop recorded in the average of the general VC was 11.10%, a high value never recorded before, falling from 84.44% to 75.07%.

During the COVID - 2019 pandemic, while social isolation and the movement of people reduced the transmission of the virus and other contagious diseases, vaccination coverage also decreased, putting everyone's health at risk (ABREU, 2022).

Throughout the pandemic, social isolation was one of the main preventive measures. As a result, the search for Basic Health Units (UBS) fell significantly, due to the population's fear of contracting the disease, consequently affecting routine consultations and vaccinations (PROCIANOY, 2022).

For Junior (2021), the lack of communication, guidance and access to material resources has led to insecurity among professionals, making it difficult to organize strategies in the search for innovation in vaccine rooms.

In short, in Brazil, a profile of falling vaccination coverage was observed during the period analyzed, since no immunizer reached the targets recommended by the Ministry of Health in 2019 and 2020 (LEITE, 2022).

Leite (2022) blames the drop in vaccination coverage in Brazil during this period on the unavailability of immunobiologicals in vaccine rooms due to shortages. According to the author, this situation still happens a lot in the country, due to increased demand, operational problems, shortages of immunobiologicals, among others.

Another issue that should be raised is the difficulty the elderly have in getting around to get vaccinated, a fact that has been exacerbated by the COVID-19 pandemic. In this case, the possibility of vaccinating elderly people who have difficulty getting around at home is extremely favorable (NOGUEIRA, 2022).

According to Luchesi et.al (2022), there are 5.2 million elderly people in Brazil who need help with their activities of daily living.

Lima-Costa (2022) found that in 2021, 6.8% of the elderly had some kind of limitation in carrying out basic activities of daily living, 17.3% for instrumental activities, and 8% of Brazilian households had at least one elderly person who needed help with their activities of daily living.

Azambuja et.al (2022), pointed out that during the COVID-19 pandemic, 14.7% of elderly people were unable or had great difficulty leaving their homes because of limitations in their functionality, which corresponds to an approximate number of 4.5 million elderly Brazilians with possible difficulty getting vaccinated outside their home.

There are must also be added the existence of a significant number of elderly people who live alone and have no help in their daily lives, even if they need it. Around 11% of elderly people with functional limitations do not receive any kind of help (SIQUEIRA, 2022).

No less relevant is the identification of myths and beliefs surrounding flu vaccination in the elderly, keeping them away from the VC (PEREIRA, 2018).

Another factor to be highlighted was the anti-vaccine movements, in which the WHO declared vaccine refusal to be one of the ten threats to global health emphasizing that in previous years, refusal was linked to ignorance about immunizers and their effectiveness, but that century it is more difficult to understand this fact (CAMARGO JR, 2020).

For Hayama et.al (2023), there is a need for the Ministry of Health to be active in disseminating information to citizens, making the population aware of the need to apply vaccines and the consequences of non-application, and the quickest and most effective way to reach a wide range of citizens is through wide range of citizens is the possibility of interaction between the sender and the recipient, as it encourages active communication between everyone in the information chain, which is what the Ministry of Health expects.

Caires et.al (2023) pointed out in their study that there was a lack of promotion of the awareness and vaccination campaign, which reflected in low rates of vaccinated people in Brazil in the first years of the pandemic.

Souza (2022) suggests that every vaccination campaign should be massively advertised using all available means of communication to reach society, making it clear that vaccination is always essential for the resumption of socio-economic and public health normality.

FINAL CONSIDERATIONS

To sum up, COVID-19 has caused damage in several sectors in Brazil, especially in the health sector, specifically in vaccination campaigns such as influenza.

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Disinformation and anti-vaccine movements have also contributed to this drop in immunization.

With regard to the pandemic (COVID-19), social isolation stands out as one of the main reasons why demand for vaccination has fallen even further.

On top of all this, the pandemic has led to poor working conditions, a lack of supplies and personal protective equipment, thus increasing the risk of health workers falling ill.

All this data can be seen in the drop in the Influenza VC among cities in Brazil.

There is therefore a need to create effective strategies to combat the fall in vaccination coverage and return to the good indicators of the past, thus avoiding the return of infectious diseases that were once eradicated, or in the case of influenza, an increase in the number of deaths from the disease.

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