ANALYSIS OF CHILDHOOD POLIO VACCINE COVERAGE IN THE CENTRAL-WEST REGION UNDER THE INFLUENCE OF THE PANDEMIC AND ANTI-VACCINATION MOVEMENTS

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ABSTRACT

Introduction: Vaccination is one of the most cost-effective and safe interventions, providing both individual protection and collective immunity, and is a mandatory component of health programs. Even so, there has been a decline in adherence rates for key vaccines, including polio. Poliomyelitis, known as polio or infantile paralysis, is a disease that Brazil has not recorded in its wild form for 29 years, but the risk of contracting it still exists due to low vaccination coverage in the country, which has been influenced by the COVID-19 pandemic and the rise of anti-vaccination movements. **Objectives:** To identify the prevalence of polio vaccination coverage in children, as well as the impact of the pandemic and anti-vaccination movements on polio vaccination coverage. **Methodology:** A quantitative retrospective study was conducted through the collection and analysis of data from 2019 to 2021, obtained from the Immunization Program Evaluation System, provided by the Department of Informatics of the Unified Health System (DataSUS). **Results:** Vaccination coverage in 2021 in the Midwest, the year with the highest mortality rate of the pandemic, showed an overall decrease in polio vaccination rates compared to 2020 and 2019, with 74.22% of the complete schedule, 64.33% of the first booster, and 59.9% of the second booster. Among the federal units, the state of Goiás continued to have the lowest vaccination coverage, with 72.72% of the population fully vaccinated. However, the state of Mato Grosso became the state with the highest total coverage, with 76.29%. Consequently, it was possible to observe reductions in the complete vaccination schedule, first booster, and second booster in 2020 compared to 2019, with reductions of 5.3%, 5.1%, and 1.5%, respectively. Similarly, in relation to 2021, the reductions were 6.6%, 9.3%, and 18.8%, respectively, when compared to 2020. **Conclusion:** Despite the limitations of the study, as it uses secondary data (DataSUS), a probable causal relationship can be seen between the reduction in polio vaccine coverage and the COVID-19 pandemic and anti-vaccine movements. Therefore, continuous and coordinated commitment from political entities and health professionals is necessary in organizing and planning actions aimed at raising awareness in society about the importance of childhood vaccination against polio.

Keywords: Vaccination Coverage; Polio Vaccine; Anti-Vaccination Movements; COVID-19.

INTRODUCTION

Poliomyelitis, also known as polio or infantile paralysis, is an acute infectious disease that mainly affects children under five years of age, caused by the poliovirus, which affects the central nervous system and leads to the destruction of motor neurons, resulting in flaccid paralysis. The vaccine, consisting of attenuated virus, acts beneficially against the wild virus of the disease, rendering the virus devoid of neurovirulence (RECHENCHOSKI *et al.,* 2015 and SALVADOR *et al.,* 2023).

However, although Brazil has not had any cases of the disease caused by the wild virus for 29 years, having received the disease elimination certificate in 1989, the risk of contracting it still exists due to low vaccination coverage in our country (SALVADOR *et al.*, 2023). Among the reasons for this consequence is the COVID-19 pandemic, which highlighted the lack of adherence and the collapse of vaccination in health systems, as well as anti-vaccination movements that, associated with the spread of false information, pose a potential risk to the health of the population, with the resurgence of diseases eradicated in the country, such as poliomyelitis (MOURA et al., 2021).

Thus, the study is of extreme relevance in raising awareness among the population about the real possibility of reintroduction of poliomyelitis in Brazil due to the decline in vaccination coverage rates, since global eradication has not occurred, aiming to analyze childhood vaccination coverage in the Central-West region under the influence of the pandemic and anti-vaccination movements from 2019 to 2021, in order to contribute to the establishment of corrective public policies.

METHODOLOGY

This research is a retrospective study with a quantitative approach based on the collection and analysis of data on childhood vaccination coverage in the Central-West region between 2019 and 2021 for the polio vaccine, collected through the Immunization Program Evaluation System, made available by the Information Technology Department of the Unified Health System (DataSUS). The sample included all male and female individuals up to two years of age who were vaccinated during the aforementioned period. On the other hand, vaccination coverage data for populations that exceeded the age range chosen in this study and that were not within the pre-established time frame were excluded.

RESULTS

Table 1 details the total vaccination coverage in the Midwest region in 2019, the pre-pandemic period. It can be observed that the complete polio vaccination schedule totaled 85.4%, with the first booster covering 78% and the second booster covering 76.11%. With regard to states, Goiás had the lowest vaccination coverage rate when compared to other states.

Table 1 - Complete polio vaccination schedule in the Midwest region in 2019.

Regions/Federative Unit (UF)	Vaccination Schedule Complete	1st Booster	2nd Booster
Total	85.4	78	76.11
Mato Grosso do Sul	94.41	92.92	94.68
Mato Grosso	85.81	74.42	74.38
Goiás	81.52	73.61	67.6
Federal District	84.32	77.23	79.7

Source: National Immunization Program Information System (SI-PNI/CGPNI/DEIDT/SVS/MS), 2024 and 2nd booster in Ferreira and Rodrigues (2023), based on DATASUS data.

Table 2 shows vaccination coverage in 2020, the year when the COVID-19 pandemic began, evidencing that the complete vaccination schedule reached 80.47%, with 73.77% coverage for the first booster and 78.7% for the second, differing considerably from 2019.

Table 2 - Complete polio vaccination schedule in the Midwest region in 2020.

Regions/Federal Units (UF)	Vaccination Schedule Complete	1st Booster	2nd booster
Total	80.47	73.77	78.7
Mato Grosso do Sul	83.16	76.55	84.75
Mato Grosso	81.50	75.52	77.22
Goiás	78.13	71.98	74.58
Federal District	81.54	72.64	84.62

Source: National Immunization Program Information System (SI-PNI/CGPNI/DEIDT/SVS/MS), 2024 and 2nd booster in Ferreira and Rodrigues (2023), based on DATASUS data.

Table 3 refers to vaccination coverage in 2021, the year in which the pandemic mortality peaked, showing an overall decrease in vaccination rates compared to 2020 and 2019, with 74.22% for the complete schedule, 64.33% for the first booster, and 59.9% for the second booster.

Table 3 - Complete polio vaccination schedule in the Midwest region in 2021.

Regions/Federal Unit (UF)	Vaccination Schedule Complete	1st Booster	2nd Booster
Total	74.22	64.33	59.9
Mato Grosso do Sul	75.71	65.87	61.54
Mato Grosso	76.29	65.63	62.37

Goiás	72.72	61.85	55.38
Federal District	73.23	66.55	66.62

Source: National Immunization Program Information System (SI-PNI/CGPNI/DEIDT/SVS/MS), 2024 and 2nd booster in Ferreira and Rodrigues (2023), based on DATASUS data.

In addition, Table 4 shows a descriptive analysis of the decline in polio vaccination coverage, estimated using data (total + states + Federal District) from isolated percentages from DataSUS. Consequently, it was possible to observe reductions in the complete vaccination schedule, first booster, and second booster in 2020, compared to 2019, with reductions of 5.3%, 5.1%, and 1.5%. Similarly, in relation to 2021, the reductions were 6.6%, 9.3%, and 18.8%, respectively, when compared to 2020.

Table 4 – Descriptive analysis of the decline in vaccination coverage

	Year	Average ± SD	Decrease compared to the previous year	Median	Minimum	Max
Complete vaccination schedule	2019	86.3 ± 4.84	0	85	81.	94
	2020	81 ± 1.85	-5.3	81.5	78.1	83
	2021	74.4 ± 1.54	-6.6	74.2	72.7	76.3
1st Reinforcement	2019	79.2 ± 7.87	0	77	7	92
	2020	74.1 ± 1.92	-5.1	73.8	72	76.5
	2021	64.8 ± 1.86	-9.3	65.6	61.9	66
2nd Reinforcement	2019	78.5 ± 10.06	0	76.1	67	94.7
	2020	80 ± 4.55	1.5	78.7	74.6	84.8
	2021	61.2 ± 4.07	-18.8	61.5	55.4	66

Source: Own elaboration

CONCLUSION

Despite the limitations of the study, which used secondary data (DataSUS) that were not always complete or accurate, a considerable reduction in polio vaccination coverage rates in the Central-West region from 2019 to 2021 was observed, a reduction strongly associated with the COVID-19 pandemic and all the social and political issues involved in this process, including the growth of anti-vaccination movements.

Therefore, there is a need for ongoing and coordinated commitment from political entities and health professionals in organizing and planning actions such as vaccination, expanding care services, actively seeking out the target audience, and

giving talks in communities and schools, with a view to raising awareness about childhood vaccination, in order to provide accurate information about the importance of vaccination, thereby combating the spread of fake news.

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