

<https://doi.org/10.33472/AFJBS.6.6.2024.5350-5353>



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

From Struggle to Success: India's Journey to Polio Eradication

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Article Info

Volume 6, Issue 6, June 2024

Received: 17 April 2024

Accepted: 20 May 2024

Published: 11 June 2024

doi: 10.33472/AFJBS.6.6.2024.5350-5353

ABSTRACT:

Background: Similar to the current public health concerns concerning the deadly Corona virus in the 2020s, polio posed a serious threat to children's health throughout the world in the 1980s and 1990s. This article develops into the historical context of polio including its devastating impact on communities and its long standing presence in India, particularly in regions like Uttar Pradesh and Bihar.

Methods: The article examines the development of Polio vaccines and concentrated efforts to combat the disease in India. Two key vaccines – oral polio vaccine and the inactivated polio vaccine played a pivotal role in polio prevention. An article highlights the critical role of these vaccines in reducing the global burden of polio cases.

Results: Through the implementation of the Global Polio Eradication Initiative and India's Pulse Polio Immunization Programme, remarkable progress was made in reducing polio cases. India's commitment to the World Health Organization's resolution on global polio eradication led to a substantial decline in cases, preventing countless children from suffering the debilitating effects of the disease. In 2014, the World Health Organization declared India a polio-free country after India's extensive efforts and substantial investment.

Discussion: India marked its journey to becoming a Polio-free country with dedication, innovation, and extensive community engagement. The effort included using public figures to promote immunization, launching awareness campaigns through print and radio media, and conducting intensive polio drops camps. India's success in polio eradication was officially recognized, making it the 11th country in the Southeast Asian region to achieve polio free status.

Key Words: Polio, Inactive Polio Vaccine, Oral Polio Vaccine, Polio Eradication Programme, National Immunisation Programme, India.

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What is polio?

Polio is a deadly viral infection that affects the nervous system. This virus spreads from one person to another. Mainly spread by the faecal-oral route. One transmits the disease by consuming water and food contaminated with virus-infected faecal particles¹. It affects the intestinal tract. Most intestinal infections do not cause serious illness. But the infection can cause meningitis or paralysis in some people.

Although most people infected with polio develop no symptoms, some may experience mild symptoms such as fever, fatigue, headache, sore throat, nausea, and vomiting². Sometimes, as the disease progresses, there may be back and neck pain and muscle paralysis. In some cases, death can occur when the respiratory muscles fail. The World Health Organization estimates that one in 200 illnesses causes' irreversible paralysis, primarily in the legs³. 10% to 5% of those impacted pass away from respiratory failure. It mainly impacts kids under five years old.

The disease's historical context

The tale of poliomyelitis is extensive. The first is an inscription that dates back three millennia, to the 18th Egyptian Dynasty (1580-1350 BCE), and depicts a disfigured legless priest. Given that moderate paralysis is the most typical poliomyelitis symptom, since the beginning of time, polio has been identified in India due to inadequate sanitation and dense population, particularly in Uttar Pradesh and Bihar⁴.

Michael Underwood, an English physician, published the first clinical account of polio in 1789, describing it as "debility of the lower extremities." Contributions by physicians Jacob Heine and Karl Oskar Medin led to the systematic investigation of polio and the discovery that the disease could be contagious. So polio was also known as Heine-Medin disease⁵. Early outbreaks in Europe date back to the early 19th century, and the first in America occurred in 1843. During World War II, polio was a serious public health issue in the United States. But the number of instance of paralytic poliomyelitis did not reach epidemic proportions until the early 20th century⁶.

The polio vaccine in India

The polio virus was killing or crippling over half a million people annually by the mid-1900s, when it was found globally. A vaccination was desperately needed because there was no treatment and diseases were spreading.

Polio cannot be cures; prevention is the only effective treatment. When administered repeatedly, the polio vaccination can offer a child lifetime protection⁷. The oral polio vaccine and the inactivated polio vaccine are the two vaccinations available to prevent this illness.

In 1949, John Enders, Thomas Weller, and Fredrick Robbins at Boston Children's Hospital successfully cultured poliovirus in human tissue, marking a breakthrough. 1954 witnessed the Nobel Prize awarded in recognition of their groundbreaking achievement⁸.

In the early 1950s, American physician Jonas Salk developed the first successful vaccine shortly after. In 1953, Salk tested the vaccine on his family and himself. A year later, 1.6 million children in the US, Canada, and Finland received the shots. On April 12, 1955, the day Salk's dormant polio vaccine was approved, the trail's results were made public. Annual cases of polio have decreased from 58000 to 5600 since 1957⁹.

Albert Sabin created the oral polio vaccine, which was the second kind of polio vaccination. The virus used in Sabin's vaccination is attenuated and administered orally as drops. The vaccine was shown to be safe and effective in trails conducted on 20000 children in the Soviet Union in 1958, 10 million children in 1959, and over 110000 children in Czechoslovakia between 1958 and 1959¹⁰. The inactivated polio vaccine protects only vaccinated children from polio. But the oral polio vaccine protects the vaccinated child and limits the spread of the disease to others. Therefore, the oral vaccine is taken in most countries. The Pasteur Institute of India developed and produced the first trivalent oral polio vaccine (OPV) in India in 1970¹¹.

India's scheme to Eradicate Polio

In 1988, India committed to the World Health Organisation's Resolution on Global Polio Eradication. As a result, the Global Polio Eradication Initiative (GPEI) was founded. The number of cases of polio has decreased by over 99% since the GPEI was implemented. Furthermore, since 1988, polio vaccinations have saved 20 million children from suffering strokes.¹²

The Pulse Polio Programme, India's initiative to eradicate polio, was formally introduced in December 1995. There were between 50000 and 150000 cases of polio annually in the nation at that time. Two times a year is National Immunisation Day (NID); in addition high-risk states and regions observe Sub-National Immunisation Day (SNID)¹³. Polio drops were advised for children ages 0 to 5 in these programmes.

Before the project was launched, 60 percent of the world's polio cases were in India. The prediction of the world was that India would not be able to control polio. However, India started an aggressive polio vaccination drive, employing famous persons to promote the programme and airing radio and print ads to urge people to get vaccinated¹⁴.

Following the government's extensive efforts to eliminate polio through the operation of polio drop camps, at a cost of Rs. 1000 crore, the final case of polio was reported from the Howrah district in West Bengal on January 13, 2011¹⁵. India was thus taken off the list of nations where polio is prevalent by the World Health Organisation.

The world Health Organisation declared India free of polio on March 27, 2014, and the "Regional Certification Commission (RCC)" certified the country as such for the South-East Asian region, which includes India, after it remained free of the disease for three years in a row¹⁶. The World Health Organisation has officially declared our country a polio-free country. With this, India is the 11th country to be declared polio-free in the Southeast Asian region by the World Health Organization. The officials of the World Health Organisation presented the certificate to the then Union Health Minister, Ghulam Nabi Azad. Speaking at that time, Ghulam Nabi Azad thanked the World Health Organisation, UNICEF, NGOs, and parents for working together with the government to eradicate polio. Ghulam Nabi Azad informed us that teams of 23 lakh volunteers and 1 lakh 50 thousand monitors have reached every child in the country day and night to eradicate polio¹⁷. India has spent the last twelve years free of polio. The state of Tamil Nadu has been free of polio for the last 19 years.

Although India has now become a polio-free country, health experts say there is a possibility of polio spreading to India from neighbouring countries, including Pakistan, as it has not been completely eradicated.

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