



Polio Eradication in endemic countries, 2024: Progress, Challenges, and the Road Ahead

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Abbreviations: WPV – Wild Poliovirus, WHO – World Health Organization, CDC – Centres for Disease Control and Prevention, MMWR – Morbidity and Mortality Weekly Report, NEAP – National Emergency Action Plan, PEI – Polio Eradication Initiative

Summary:

This opinion summarizes the ongoing risk of eradication of polio in Afghanistan and Pakistan—the only two endemic countries for wild poliovirus up to and including 2024. There

have been reoccurring epidemics in each country despite global efforts and reducing numbers of cases in a few years due to political instability, threats to the security of health workers, massive disinformation surrounding vaccines, logistic issues, and cross-border spread. The report highlights an unexpected peak in polio cases in 2024 as a sign of weakness of advances made over the past years. Efforts such as National Emergency Action Plans, cross-border immunization campaigns, community mobilization, and strengthened surveillance have been patchily successful. Yet, vaccine hesitancy, militant resistance, insecure areas all still stand in the way of polio being completely eradicated. The authors call for immediate need for enhanced security of health workers, strengthening of collaboration in the region, upgrading of infrastructure and continued public education activities. If they continue their assiduous work, Pakistan and Afghanistan can fight these challenges and become polio-free.

Introduction

Poliomyelitis (polio) remains a relevant public health concern, particularly in Pakistan and Afghanistan—the only two nations that were polio-endemic as of 2022 [1]. Although significant progress has been made globally towards the disease's elimination, these two countries have not been able to manage wild poliovirus (WPV) transmission due to socio-political, logistical, and security challenges. Despite routine immunization campaigns and foreign assistance, polio has remained a formidable opponent, particularly in remote and conflict-stricken areas [2]. This commentary provides an overview of polio eradication in Pakistan and Afghanistan, discussing the key challenges and future outlook using 2018-2024 statistics (Figure-1), and evidence from academic and institutional sources [2].

Current State of Polio in Pakistan and Afghanistan

Polio is a highly infectious viral disease predominantly common among children under the age of five, leading to irreversible paralytic disability in its most severe forms [3]. The World Health Organization (WHO) and other global health agencies have spearheaded efforts to eradicate polio worldwide, but as depicted by the fluctuating number of cases shown over the years, endemic transmission continues to be active in Pakistan and Afghanistan [2,4].

According to the *Morbidity and Mortality Weekly Report* (MMWR) of the Centres for Disease Control and Prevention (CDC), Pakistan also experienced a significant decrease in polio cases from 147 in 2019 to just one case in 2021 [5,6]. But in 2022 and 2023, there was a resurgence with 20 and six cases, respectively, and 2024 has seen a sharp increase to 73 cases

so far. Afghanistan also had ups and downs, between 29 in 2019 to only two in 2022, only to rise suddenly with six cases in 2023 and steeply to 25 cases in 2024 (Figure-1) [2]. Such statistics reflect the consistent challenges involved in eradicating the virus completely.

Factors Contributing to Polio Persistence

Despite international efforts, there are several challenges which hinder the eradication of polio in Pakistan and Afghanistan. These are political instability, vaccine misinformation, logistics challenges, and security threats to healthcare workers.

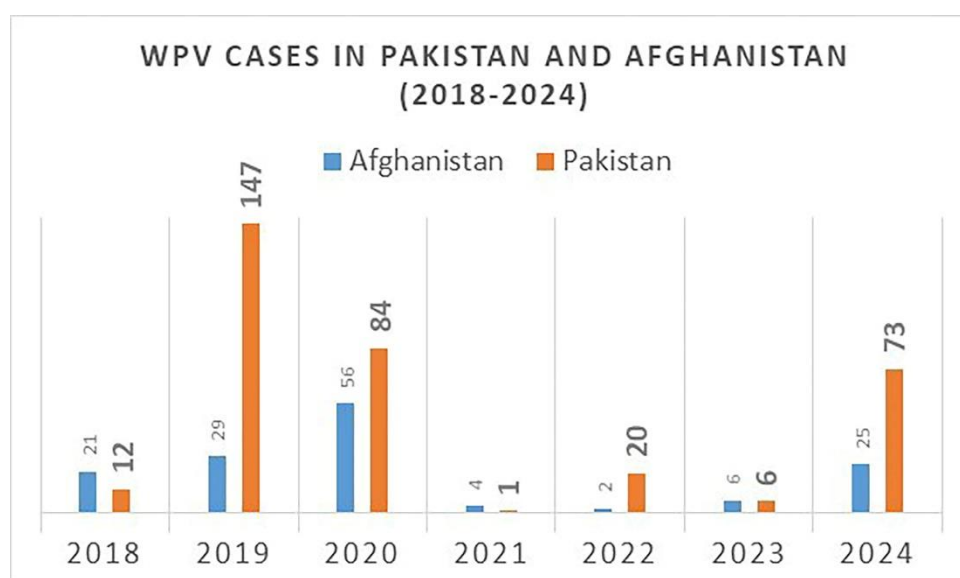


Figure-1: WPV Polio cases in Pakistan and Afghanistan between 2018-2024.

1. Political and Security Challenges

Both Pakistan and Afghanistan have seen severe political instability, which has had a direct impact on polio eradication efforts. In Afghanistan, Taliban domination in certain regions has been an issue in conducting immunization campaigns. While the Taliban initially banned polio vaccination campaigns, they have now permitted door-to-door vaccination in certain areas, which has had some progress but is not sustained [4].

Similarly, polio workers have been targeted time and again in Pakistan by militants who are also resistant to launching vaccination campaigns against them, suspected of being western conspiracies [7]. Some of the health workers and security personnel have accordingly been

attacked, resulting in the disruption of immunization activities [8]. This has heavily restricted access to children residing in remote and war-torn areas.

2. Vaccine Misinformation and Public Hesitancy

Misinformation about vaccination against polio has been the main contributory factor to the hindrance of eradication. Misgivings on vaccination drives by the majority of communities in both countries are in the perception that polio vaccines induce sterility or are being used as part of an international conspiracy [7]. The past events, including using vaccination campaigns to collect intelligence, have encouraged such misgivings.

A study by Ataullahjan et al. (2021) highlights that resistance to vaccines is based on religious myths, low literacy rates, and suspicion of government-led health interventions [9]. To combat vaccine hesitancy, intensive community mobilization and advocacy need to be carried out to dispel myths and build confidence in polio vaccination.

3. Geographical and Logistics Barriers

The geography of Afghanistan and Pakistan is a significant logistic challenge in the delivery of the vaccine to each child. The mountains, rural communities, and nomadic population provide challenges to health workers' access to rural children. Moreover, seasonal migration contributes to unvaccinated children, with unvaccinated pockets being at risk of infection [10].

In Afghanistan, particularly in provinces such as Kandahar and Helmand, there have been ongoing conflicts that have hindered access to health facilities, thus lowering vaccination coverage. Similarly, in Pakistan, regions such as Balochistan and Khyber Pakhtunkhwa have had lower vaccination coverage due to poor infrastructure and resistance from local communities [8].

4. Cross-Border Transmission

The second major impediment to wiping out polio from both nations is the cross-border migration of individuals between the two nations. That the border is not impervious results in the presence of infected individuals being able to transfer the disease from one nation to the other easily. Coordination between governments of both countries and international health

organizations has attempted to conduct cross-border vaccination exercises, but they remain ad-hoc due to security concerns [4].

Progress and Achievements in Polio Eradication

Despite these challenges, both Pakistan and Afghanistan have made significant progress towards polio eradication in the past. The initiation of National Emergency Action Plans (NEAPs) in Pakistan and the Afghanistan Polio Eradication Initiative (PEI) has led to remarkable gains in immunization coverage [1].

1. Declining Polio Cases and Improved Surveillance

The Figure-1 indicate that polio cases have declined significantly in recent years, particularly in 2021 when Pakistan reported only one case. This success is a result of enhanced surveillance, enhanced coordination between the government and international agencies, and enhanced community engagement. The WHO has also established robust monitoring systems to track the spread of poliovirus so that outbreaks are promptly controlled [4].

2. Expansion of Vaccination Campaigns

Mass campaigns, such as Pakistan's *Sehat Tahafuz* program, have focused on vaccination door-to-door, reaching millions of children annually. Similarly, Afghanistan has ramped up its activities by enhanced outreach programs in collaboration with UNICEF and WHO [10].

3. Community Engagement and Advocacy

In response to vaccine misinformation, governments and non-governmental organizations have recruited the help of religious leaders, influencers in communities, and media campaigns to advocate for polio vaccination. In Pakistan, programs such as *Zindagi Mehfooz* have aimed at informing parents regarding the advantages of immunization, which has served to decrease vaccine hesitancy [9].

Future Prospects for Polio Eradication

Though polio eradication efforts have yielded some gains, there remain significant challenges to being a polio-free nation in Afghanistan and Pakistan. Plans in the future need to be centered on the following key areas:

1. Strengthening Security Measures for Polio Workers

The safety of healthcare workers is more important than successful immunization campaigns. The governments must enhance security, send security-trained staff to guard them, and interact with the locals to gain confidence and trust in collaboration [7].

2. Enhancing Cross-Border Coordination

Pakistan and Afghanistan must coordinate more on synchronized immunization campaigns. The presence of border vaccination points and tracking migrant flows will be critical in containing cross-border transmission [4].

3. Addressing Vaccine Hesitancy Through Education

Long-term success in polio eradication is based on sustained community mobilization. Governments need to invest in awareness campaigns, utilizing social media, radio, and television to combat misinformation and promote acceptance of vaccines [9].

4. Expanding Health Infrastructure in Remote Areas

Improving access to healthcare in rural areas will ensure that all children are vaccinated. Investing in mobile health units and training community health workers can bridge the gap in immunization coverage [1].

Conclusion

Eradication of polio in Afghanistan and Pakistan has seen both highs and lows, with a decline in cases in recent years but persistent problems in the guise of vaccine refusal, security threats, and logistical barriers. Governments, international agencies, and health workers' combined efforts to improve immunization rates notwithstanding, greater effort is required for complete eradication. Enhanced security, increased cross-border collaboration, fighting misinformation, and enhanced healthcare infrastructure will be the game-changers in silencing the remaining holdouts of polio. If properly implemented, Pakistan and Afghanistan can join the ranks of polio-free nations soon, an accomplishment that will be a milestone in public health history around the globe.

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