

## **Eradicating Polio in Balochistan: An Analysis of the Challenges and Solutions to This Security and Health Issue**

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### **Abstract**

*In many regions with limited health care access and vaccination programs, the eradication of polio remains a critical public health challenge. Understanding the level of polio awareness and knowledge among high-risk populations is crucial for disease prevention. Pakistan continues to be one of the three remaining countries where indigenous wild poliovirus transmission persists, with Balochistan, a high-risk province, facing significant challenges. These challenges include low vaccination coverage, limited accessibility, inadequate community engagement, and persistent security issues. This qualitative study aims to address the hurdles of polio eradication in Balochistan by exploring vaccine hesitancy causes and identifying opportunities for community engagement and leadership in promoting vaccine acceptance. Through interviews and data analysis, we examine potential solutions and obstacles encountered in eliminating polio from Balochistan. Our findings highlight the significance of sustained community participation, targeted education campaigns, and culturally sensitive approaches to address vaccine hesitancy. Additionally, coordinated interventions, such as strengthening vaccination infrastructure, improving healthcare access, and addressing security concerns, are crucial in overcoming the challenges of polio eradication. This study contributes to the existing literature by elucidating the specific challenges and opportunities related to polio eradication in Balochistan. The insights gained inform policymakers and public health practitioners in designing effective strategies for enhancing vaccination acceptance and community engagement. By directly addressing these issues, significant progress can be made towards a polio-free Balochistan, furthering global efforts to eradicate polio.*

**Keywords:** *Polio eradication, Vaccine Hesitancy, Wild Poliovirus, Lack of awareness.*

## **Introduction**

Polio, or poliomyelitis, is an infectious disease primarily affecting young children under the age of five, caused by the poliovirus (Baicus, 2012). Initial symptoms include fever, headache, fatigue, neck stiffness, vomiting, and limb pain, and in severe cases, the virus can lead to paralysis attacks (User, 2022). Polio is highly contagious and spreads through the bloodstream, reaching the central nervous system and causing paralysis in limbs as well as respiratory muscles (Devan, 2020). In Pakistan, efforts to combat polio continue to this day. While there was a record low of 8 cases reported in 2017, subsequent years witnessed an increase in the number of cases. In 2018, there were 12 cases, followed by 147 cases in 2019, 84 cases in 2020, and 1 and 13 cases in 2021 and 2022, respectively (Javed et al., 2023). While the Global Polio Eradication Initiative (GPEI) has made significant progress in reducing polio worldwide since its launch in 1988, Pakistan remains one of the last two countries where wild poliovirus transmission persists (Mbaeyi et al., 2021). Balochistan, one of Pakistan's provinces, has been identified as a high-risk area for polio transmission due to various factors such as low vaccination coverage, limited accessibility, inadequate community engagement, and persistent security issues.

Efforts to combat polio in Pakistan began with the Polio Eradication Initiative in 1994, which resulted in a remarkable reduction in polio cases (Nishtar, 2010). However, there have been fluctuations in case numbers over the years, with a resurgence in 2014 and subsequent progress. In recent years, Pakistan has seen a significant improvement in controlling wild poliovirus transmission, indicating that polio eradication may be achievable (Alexander et al., 2014). Furthermore, The devastating impact of the COVID-19 pandemic on healthcare in Pakistan has further exacerbated the situation. Routine immunization programs against various vaccine-preventable diseases, including polio, were halted during the lockdown in the middle of 2020. As a result, an estimated 40 million children were deprived

of the polio vaccine. The interruption of door-to-door immunization campaigns against polio was a consequence of the country's focus and diversion of resources towards combating the pandemic (Javed et al.,2023). Despite progress, polio remains active in certain districts of Pakistan, including Karachi, Quetta, and Peshawar. Balochistan faces specific challenges due to its large population, high refusal rate, limited resources, weak public services, and conservative culture (Ataullahjan et al., 2021). Understanding the causes of polio cases in Balochistan and identifying solutions are crucial steps towards making the province and the entire country polio-free.

This research aims to investigate the underlying reasons for the persistence of polio in Balochistan and explore potential solutions. By addressing the factors that contribute to the failure in eliminating polio, promoting healthier societies, learning from successful polio elimination efforts in other regions, and strengthening the immunization system, we can work towards eradicating polio from Balochistan. To guide our study, we have established the following objectives:

1. Identify the factors contributing to the failure in eliminating polio from Balochistan.
2. Promote healthier societies in Balochistan through effective interventions.
3. Learn from successful polio elimination experiences in other regions.
4. Strengthen the immunization system in Balochistan.

Additionally, this study focuses on addressing the following research questions:

1. What is the level of polio awareness among the population, including knowledge of symptoms and preventive measures?
2. Which areas in Balochistan experience the highest incidence of polio?
3. How can we raise awareness among the public and address misconceptions regarding the polio vaccine?

By exploring the challenges and potential solutions to eradicating polio in Balochistan, this study aims to contribute to the efforts of making the province polio-free, ensuring a healthier future for children and advancing the goal of a polio-free Pakistan.

### **Literature Review**

To understand the concept of polio eradication, it is essential to define the terms "polio" and "eradicate." Poliomyelitis is a highly contagious and incurable disease that primarily affects children under the age of five, often resulting in limb paralysis (Ali et al., 2015). The term "eradicate" means to completely destroy or eliminate something from a specific region (Oxford Advanced Learner's Dictionary, 2022). Previous research has highlighted the persistent challenge of polio in Pakistan, where it remains endemic. The country's struggle with polio can be attributed to opposition from certain groups towards polio vaccination and inadequate governance. Tariq Iqbal Bhutto, the Head of the National Polio Certificate Committee, has emphasized the importance of greater accountability among district health authorities in effectively combating the disease (Ahmad, 2007). Addressing this challenge necessitates allocating additional resources to healthcare and social services development in regions such as FATA, NWFP, and Balochistan.

Numerous private and public organizations have worked tirelessly for decades to eradicate polio globally. Although polio has been eliminated in all countries except Pakistan and Afghanistan, the focus now needs to be on addressing this persistent problem. In Pakistan, the Expanded Program on Immunization (EPI) was initiated in 1978 to reduce the impact of diseases like polio and tetanus. While the program has led to a decline in polio cases, complete eradication has not yet been achieved (Ali et al., 2015). Recent data indicates both progress and challenges in the fight against polio in Pakistan. In 2021, Pakistan recorded only one case of Wild Poliovirus Type 1 (WPV1) in Killa Abdullah, Balochistan, compared

to 84 cases reported in various provinces in 2020 and 147 cases in 2019. However, as of August 20, 2022, 14 WPV1 cases were reported from two districts in Khyber Pakhtunkhwa, with ages ranging from 7 to 28 months. Genetic analysis revealed that these cases belonged to the same genetic cluster. Additional genetic clusters were identified from environmental surveillance isolates, indicating gaps in acute flaccid paralysis (AFP) surveillance. Between July 2019 and April 2021, Pakistan reported 165 cases due to transmission from multiple sources (GPEI-Pakistan, 2022).

In Balochistan, three polio cases were reported in 2020. These cases involved an eight-month-old girl from Zhob whose family refused vaccination, a four-and-a-half-year-old girl from Jhal Magsi, and a 13-month-old girl from Naseerabad district (Balochistan Health Department, 2022). However, the situation has improved in 2022, with only one case reported thus far. The government of Balochistan has prioritized the eradication of polio and is effectively utilizing available resources.

### **Vaccination Hesitancy and Misconceptions**

Vaccination hesitancy and misconceptions have been identified as significant barriers to polio eradication efforts in Balochistan. Studies have highlighted the presence of misinformation and misconceptions about vaccines among communities, leading to vaccine refusal or reluctance. For instance, research conducted by Ahmed et al. (2019) found that misconceptions related to vaccine safety and religious beliefs were prevalent among caregivers in Balochistan. Addressing these misconceptions and improving vaccine acceptance requires targeted educational campaigns that engage community leaders, religious authorities, and healthcare providers to dispel myths and provide accurate information (Ahmed et al., 2019; Nishtar, 2010).

### **Community Engagement and Participation**

Successful polio eradication efforts in Balochistan rely heavily on community engagement and participation. Community involvement not only enhances vaccine acceptance but also helps address the cultural and social barriers specific to the region. Research by Khan et al. (2018) emphasized the importance of community-led initiatives and engaging local stakeholders, such as community leaders, to foster trust and mobilize support for vaccination campaigns. Involving community members in the planning, implementation, and monitoring of polio eradication activities ensures that interventions are culturally sensitive and tailored to the specific needs of the communities (Khan et al., 2018).

### **Strengthening Vaccination Infrastructure**

Strengthening the vaccination infrastructure is crucial for polio eradication in Balochistan. Research has highlighted the need for improved healthcare access, especially in remote and underserved areas, to ensure timely and efficient delivery of polio vaccines. A study by Rehman et al. (2016) emphasized the importance of expanding the reach of vaccination services, training healthcare workers, and enhancing the cold chain system for vaccine storage and distribution. Additionally, improving routine immunization coverage and integrating polio vaccines with other routine immunizations can contribute to the overall success of polio eradication efforts (Rehman et al., 2016; Ahmed et al., 2019).

### **Addressing Security Concerns**

Polio eradication efforts in Balochistan are also hindered by persistent security concerns. The presence of militant groups and conflicts in certain areas has resulted in threats and attacks on vaccinators, leading to disruption of immunization campaigns. Research by Shah et al. (2016) highlighted the challenges posed by the Tehreek-e-Taliban Pakistan (TTP) and their ban on polio vaccination in the Federally Administered Tribal Areas (FATA) region. Addressing security concerns requires close collaboration between health authorities,

security agencies, and community leaders to ensure the safety of vaccinators and the uninterrupted delivery of polio vaccines (Shah et al., 2016).

These findings underscore the ongoing efforts to eradicate polio in Pakistan, particularly in Balochistan. However, challenges remain, including vaccine refusal, gaps in surveillance, and the need for enhanced governance and resource allocation. Further research and interventions are necessary to overcome these obstacles and achieve polio eradication in the region.

## **Research Methodology**

### **Research Design**

In this research, we have constructed a proposal to explain the relation between Polio eradication in Balochistan and its impact on society. We conducted interviews to collect data from the district of Balochistan, specifically Quetta, and nearby areas to understand the level of polio awareness among the people of Balochistan. The data collected through interviews served as primary data and formed the basis for examining how polio eradication promotes healthier societies in Balochistan and how this disease can be wiped out from the region.

### **Data Collection:**

For data collection, we employed a convenient sampling technique. Due to limitations such as time constraints, the cost of data collection, and the availability of respondents, we decided to use a non-probability convenient sampling approach. This approach allowed us to select participants based on their accessibility and willingness to participate in the study.

### **Population and Sampling:**

The targeted population for this research consisted of individuals living in Quetta and nearby areas of Balochistan. Saturation point reached after interviewing 50 individuals, which allowed us to make appropriate generalizations based on the data collected.

## **Research Analysis Tools**

To analyze the collected data, we transcribed the interviews and generated themes. We employed thematic analysis to identify key themes related to polio awareness and knowledge. This analysis helped us understand the misconceptions surrounding polio and the barriers that hinder its eradication in Balochistan.

Through this research design, we aimed to explore the relationship between polio eradication, improved health systems, and healthier societies in Balochistan. By conducting interviews and analyzing the data, we sought to provide valuable insights into the impact of polio eradication efforts in the region.

## **Results**

The interviews provided valuable insights from the participants, and we would like to highlight some of the key findings:

- Participant 1, with 12 years of experience as a polio vaccinator, emphasized a lack of awareness regarding polio. They mentioned that some individuals held Islamic misconceptions about vaccines, while others demanded compensation for receiving vaccines, believing it should fulfill their basic needs.
- Participant 2 reported encountering zero awareness about polio among the people in their assigned area. However, after providing guidance and information about polio and the vaccine, many parents agreed to vaccinate their children.
- Participant 3 mentioned that people in their area had a lower level of awareness about polio, leading to vaccine hesitancy and refusals. They highlighted the importance of addressing different types of refusal, such as countering Islamic misconceptions or addressing concerns about vaccine safety with medical information.
- Participant 4, working in a different area, also reported a lack of awareness regarding polio and its prevention. They mentioned that people in their community held



misconceptions about the polio vaccine, particularly the belief that it could cause infertility in children. Efforts were made to provide guidance and dispel these misconceptions.

- Participant 5 mentioned that very few people in their area were aware of polio. Vaccine hesitancy and negative propaganda against vaccination were identified as reasons for refusals. Some individuals demanded proof of vaccine safety before agreeing to vaccinate their children.

Based on the collected data, we identified the following themes:

- a. Awareness and knowledge of polio: The participants highlighted the limited awareness and understanding of polio among the population. This lack of knowledge contributed to vaccine refusals, as people did not perceive the necessity for vaccination or believed in misinformation about polio.
- b. Vaccine hesitancy: Vaccine hesitancy emerged as a significant barrier to polio eradication. Misconceptions and fears surrounding vaccines, including concerns about infertility and vaccine quality, contributed to hesitancy among the population.
- c. Negative propaganda against vaccination: Negative propaganda played a notable role in discouraging polio immunization. Misinformation campaigns, social media rumors, and distrust of political and healthcare establishments were identified as sources of negative messaging, leading to vaccine reluctance and poor vaccination rates.

These three themes are interconnected. Enhancing awareness and knowledge of polio can help dispel misconceptions and address vaccine hesitancy. Addressing negative propaganda is crucial to promoting acceptance and increasing vaccination rates. The results highlight the false religious beliefs, fears of vaccine-induced infertility, and security concerns as major barriers to acceptance among the targeted population. By addressing these barriers and improving polio awareness, we can work towards eradicating polio from Balochistan.

## **Discussion**

The findings of our study provide valuable insights into the challenges and potential opportunities in the campaign to eradicate polio from Balochistan. One of the major concerns highlighted in our research is the low level of awareness and knowledge about polio and the polio vaccine among certain populations. This lack of understanding is particularly worrisome, as community involvement and trust are crucial for the success of vaccination programs. It is essential to address this issue through targeted educational campaigns that engage community leaders, religious authorities, and healthcare providers to dispel myths and provide accurate information (Shrestha et al., 2023).

Another significant obstacle we identified is vaccine hesitancy, which stems from various factors such as misinformation, rumors, cultural and religious beliefs, distrust in medical professionals, and issues related to access and affordability. Overcoming these challenges and improving vaccine uptake are critical steps toward achieving polio eradication. Efforts should focus on addressing misconceptions and fears surrounding vaccines, conducting community-based interventions, and enhancing healthcare access in remote and underserved areas (Abbas et al., 2023).

However, our analysis also revealed areas where progress can be made. Engaging regional religious and civic leaders can play a vital role in building trust and promoting vaccine acceptance within their communities. Their endorsement and support can significantly influence community attitudes toward vaccination. Additionally, involving female immunizers can enhance trust and improve accessibility to vaccines, especially in traditional cultures where gender dynamics play a significant role (Hafeez et al., 2023).

Furthermore, the establishment of a provincial task force on polio eradication presents hope for coordinated efforts and better resource utilization. By bringing together government

representatives, medical professionals, and community leaders, the task force has the potential to address major obstacles hindering polio elimination in Balochistan. It can facilitate the development and implementation of comprehensive strategies, allocation of resources, and monitoring and evaluation of polio eradication initiatives (Hussain et al., 2023).

Despite these possibilities, it is evident that persistent and coordinated efforts on multiple fronts are necessary to completely eradicate polio in Balochistan. Sustained funding for community involvement and education is crucial, along with the implementation of targeted strategies to address concerns related to vaccine hesitancy and access. Collaboration between various stakeholders, including government agencies, healthcare providers, community leaders, and international organizations, is vital for the success of these efforts (Molodecky et al., 2023).

Hence challenges exist, we firmly believe that Balochistan can achieve polio eradication through collective efforts and by building upon the progress already achieved. By working together and addressing the identified challenges, Balochistan can become a polio-free province, ensuring the health and well-being of its population (Hafeez et al., 2023)

### **Conclusion**

Our analysis highlights both the challenges and possibilities in the ongoing fight against polio in Balochistan. Despite notable progress, there remain significant hurdles to overcome in order to achieve polio eradication in the province. Low awareness and knowledge about polio and the polio vaccine, along with vaccine hesitancy influenced by various factors, are key obstacles identified through our study. However, our research also identifies potential avenues for progress. The establishment of a provincial task group dedicated to polio eradication and the engagement of local religious and community leaders hold promise as opportunities for advancement in this fight. Addressing these challenges and

seizing the potential opportunities will require consistent and coordinated efforts on multiple fronts. It is crucial to tackle issues related to vaccine hesitancy and ensure equitable access to vaccination services. Continuous community engagement and education efforts must be sustained. Despite the work that lies ahead, we are encouraged by the recent advancements made in Balochistan and the potential identified through our analysis. This research contributes to a deeper understanding of the obstacles and opportunities in polio eradication efforts in the region. It offers valuable insights and suggestions to increase vaccination coverage and reduce polio incidence in Balochistan. Ultimately, our goals are aligned with international efforts to eradicate polio and improve the health and well-being of communities in Balochistan. It is imperative that government representatives, healthcare professionals, and community leaders continue to collaborate, coordinate their efforts, and allocate resources to this cause. By working together and building upon the progress already achieved, we can eliminate polio in Balochistan and contribute to the global campaign against this disease.

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