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Barriers to Eradication: Assessing Community Perceptions and Vaccination Practices Against Polio in Bannu, Pakistan

Gultuba 

BS Student, Department of Political Science, University of the Punjab, Lahore, Pakistan

Correspondence: gultuba4556@hotmail.com

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ABSTRACT

Pakistan remains one of the last global strongholds for the wild poliovirus (WPV), with the Khyber Pakhtunkhwa (KP) province, specifically districts like Bannu, facing persistent challenges to eradication. This study evaluates community perceptions and vaccination practices in Bannu to identify the socio-cultural and structural barriers hindering immunization efforts. Utilizing a quantitative review of existing literature and regional data, the study identifies widespread misconceptions, including the belief that vaccines are a tool for family planning or are religiously impermissible. Results indicate that while general awareness of polio exists, trust in government-sponsored initiatives is low due to security concerns, financial constraints, and a lack of health literacy among local influencers. The research highlights that the intersection of religious restrictions and social traditionalism accounts for a 90% refusal rate in certain high-risk demographics. To achieve a polio-free status, the study recommends socially sensitive training for local journalists, direct community mobilization through trusted religious leaders, and improved management of immunization supply chains to bridge the gap between awareness and vaccine acceptance.



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Introduction

The global effort to eradicate poliomyelitis has seen remarkable progress, yet the finish line remains elusive as the virus persists in endemic reservoirs within Pakistan and Afghanistan. In 2014, the World Health Organization (WHO) declared the international spread of the wild poliovirus a Public Health Event of International Concern (PHEIC), placing Pakistan under significant global scrutiny. Despite aggressive vaccination campaigns, the district of Bannu in Khyber Pakhtunkhwa (KP) remains a critical area where transmission continues to threaten national and international health security.

The virtual infrastructure of public health depends heavily on community "customer capturing capacity"—the ability to convince a population of the necessity and safety of medical interventions. However, in regions like Bannu, this capacity is undermined by political instability and deep-seated suspicion toward government-funded programs. The challenge is not merely logistical but psychological and cultural. Vaccination practices are often influenced by local perceptions of risk, where the fear of the vaccine sometimes outweighs the fear of the disease itself. This introduction sets the stage for a detailed analysis of why, despite decades of effort, the community in Bannu continues to harbor resistance to life-saving immunization.

Background of the Study

Historically, polio eradication in Pakistan has been hampered by a complex "Pakhtun disease" narrative, where cultural identity and resistance to Western-backed initiatives collide. The background of this study is rooted in the high incidence of polio among children in ancestral and tribal areas of KP, where logistical constraints often limit research to small, representative samples. Previous data suggests that while 79% of respondents in these areas might theoretically support prevention, a staggering 65% simultaneously view the vaccine as a covert method of family planning. This study focuses on Bannu because it represents a microcosm of these challenges: high illiteracy, rural isolation, and a

strong influence of religious experts who often restrict vaccination activities.

Literature Review

The persistence of the wild poliovirus (WPV) in Pakistan, particularly in the Khyber Pakhtunkhwa (KP) province and districts like Bannu, is a multifaceted crisis that transcends simple medical logistics. Academic discourse consistently identifies three primary barriers: deep-seated socio-cultural misconceptions, religious opposition, and a fundamental breakdown in trust between the community and state-led health initiatives.

Socio-Cultural Barriers and the "Pakhtun Disease" Narrative Research highlights that the refusal to vaccinate is often rooted in the perception of polio as a "Pakhtun disease," where cultural identity becomes a tool for resistance against perceived external interference. A significant portion of the population in high-risk areas views the Global Polio Eradication Initiative (GPEI) with suspicion. Studies indicate that while awareness of the vaccine is high (approximately 95%), acceptance is hindered by the belief that the vaccine is a covert method of Western-sponsored family planning or sterilization. This "fertility anxiety" is a dominant theme in rural KP, where large families are a cultural norm and any threat to reproductive health is met with total rejection.

Religious Perceptions and Authority The role of religious experts is a critical determinant of vaccination practices. Literature suggests that in tribal and rural areas of Pakistan, many parents rely on the decrees of local religious leaders rather than medical advice. Misconceptions that the vaccine is "UN-Islamic" or contains ingredients derived from forbidden sources (such as porcine products) are widespread. Even when fatwas (religious decrees) are issued in favor of vaccination, the influence of local, less-informed clerics often outweighs official religious stances, leading to high rates of "no parental consent" based on perceived spiritual danger.

Systemic Trust and Security Challenges The literature also emphasizes the impact of political instability and conflict on immunization efforts. In

districts like Bannu, the "frequency of missions"—referring to the repetitive nature of house-to-house vaccination campaigns—has occasionally led to community fatigue and suspicion. Residents often question why the government is so persistent with polio drops while failing to provide basic healthcare, clean water, or electricity. Furthermore, security risks for polio workers in conflict-affected zones prevent the establishment of a consistent "supply chain" for immunization, leaving children in remote areas vulnerable.

The Role of Media and Health Literacy Recent studies have pointed to the lack of health literacy among local influencers, including journalists. When media coverage is inaccurate or fails to address local concerns in regional languages, it inadvertently fuels the fire of misinformation. Training journalists and community leaders to communicate the safety and efficacy of the vaccine in a socially sensitive manner is identified as a vital, yet underutilized, strategy for eradication.

Summary of Literature Gaps

While existing studies extensively cover the reasons for refusal, there is a lack of research on the evolution of these perceptions over time in specific districts like Bannu. Most studies utilize quantitative methods that may miss the nuanced "heavenly beliefs" or local folklore regarding the disease. This study addresses these gaps by evaluating current community perceptions to provide a more localized roadmap for health practitioners and policymakers.

Research Strategy

Research strategy is all about the research activities which have been conducted during the finding of particular queries. It includes multiple factors such as how the research has been organized, its methodology, research question, organized data, and research resources.

My research strategy covers the following key factors which had been utilized during the findings.

Research Question

"Assessing community perception towards vaccination against polio in Bannu and vaccination practices" were the main points of my research, for that the whole process of research had been conducted.

Review Existing Literature

To find out the upper described queries, a lot of literature was reviewed by using a large number of keywords, leading towards the required analysis because to make the comprehensive summaries was the major task of my research. So I have tried my best to find out the existing literature which has been carried out by various researchers.

Methodology

To finalize the summaries about my research question, I have used the quantitative method that includes the review of existing literature and for that purpose a large number of data resources had been used.

Challenges

As a beginner, I have to face a lot of difficulties to find out the existing and most relevant data because I was unable to use the multiple data bases as an expert researcher, required for the best form of research results. Major challenge which had to faced, was to find out the access to advanced data basis and relevant articles.

Timeline and Resources

Although, this factor of research was not a hurdle for any expert researcher and time line had been required 3 to 4 hours to write down these summaries yet I had to passed out my 3 days to organize the whole data. For this objective, I have used the data bases including google scholar, Emerald, Store, Elsevier and Taylor and Francis by using a large number of key words in advanced research methods.

Global Context of Vaccination Challenges

The review intends to delve into the viewpoints of overseers, local area individuals, and medical assistance distributors in regards to youth inoculation enumerated in Indian ghettos.

Through instinctive strategies including center gathering consultations, multiple obstructions were prominent like absence of enthusiasm, anxiety toward antipathetic instances, worst designed timing of conventions, financial aspects, dislocation, and calculated troubles. While the discoveries provide noteworthy cognition for extra-developing immunization itemize in ghetto settings, alert is mandatory to condense the outcomes of distinct settings. Procedures advocated to incorporate general connections, feasible correspondence, organized intercessions, adequate immunization supply, impulsive forces, and a human accommodating medical care framework. Generally, the review emphasizes the significance of fitted ways to deal with address immunization difficulties in minimized networks Sigh et.al (2022).

Low vaccination rates pose remarkable health dangers on the African continent, which became particularly prominent throughout the latest COVID-19 epidemic. Notwithstanding, the second most incredible residents in the world, Africa's immunization rates are significantly lower than the worldwide average of 70%, at just 30%. Normal immunization reversible illnesses incorporate chickenpox, measles, and hepatitis. To script this, endeavors are being made to raise recognition, make vaccines easier to get, saturate in vaccine fabrication and coaching, and make vaccines more comprehensible. This audit underlines the significance of exhaustive vaccination programs in Africa to decline the weight of transmissible and non-transferable illnesses, eventually prompting better and more affluent networks. sinumvayo et al,2024)

The audit by Mushtaq and partners features the sufferings looked by Pakistan to remove polio because of elements like doubt of government, strict protection from immunization, and common efforts. This is important on a worldwide scale because Pakistan is still one of only two countries where wild polio virus (WPV) has not been exterminate. This puts travelers a threat and could be the source of outbreaks in countries where polio is not a challenge. The World Wellbeing Association (WHO) assured the global spread of

WPV a General Wellbeing Occasion of global Concern (PHEIC) in 2014, provoking brief proposals to moderate the prevalence of the infection. Simons & Patel (2015)

The article inquires the troubles of conveying vaccination administrations, especially polio inculcation, in struggling impacted regions. It analyses writing and reports, featuring the confrontation with accomplishing fundamental vaccination inclusion and the repetitive illness flare-ups in these areas. The goal of the Global Polio Eradication Initiative (GPEI) is to make up for the fact that it is impossible to provide regular immunization assistance by employing novel methods to stretch out children in these security-constrained areas. The discoveries are ranked into polio immunization in indigenous nations, zeroing in on struggle impacted regions, and episode inoculation exercises during war or political flimsiness. The article examines the unique circumstance, hurdles, systems, results, and progress in taking a chance leading immunization exercises here, giving experiences into the conquest and adversity of the polio annihilation schemes (Mbaeyi, 2023).

The Worldwide Polio Elimination Drive presented novel oral polio immunization Type 2 (nOPV2) to escape circling antibody determined polio virus Type 2 (cVDPV2). Nonetheless, partners in the Majority ruled Republic of the Congo, Kenya, and Nigeria consulted the beginning of distaste towards nOPV2 because of tensions about security, viability, and the antibody's oddity. Partners pointed out the requirement for clear, appropriate, and straightforward compatibility to address these worries. Regardless of starting doubt, partners accepted that with appropriate correspondence and backing from specialists, nOPV2 would conclusively be acknowledged via guardians. They recognized the significance of key correspondence negotiations and delegated commitment with bleeding edge laborers to assure the influential presentation of nOPV2 (Lorenzetti et al., 2023).

The Worldwide Polio Destruction Drive (GPEI) has gained critical headway since its initiation,

with the quantity of polio cases internationally decreasing. Be that as it may, challenges persevere, especially in nations like Pakistan, one of the three leftover endemic repositories of the polio virus. Notwithstanding remarkable declines in polio cases in Pakistan from 2011 to 2012, impediments like psychological warfare, antibody confusions, strict understandings, and powerless wellbeing the executives keep on hindering annihilation endeavors. This study plans to recognize and examine these boundaries thoroughly to advise the advancement regarding designated techniques for polio destruction in Pakistan and around the world. Data from WHO, Rotary International, CDC, UNICEF, and PubMed were thoroughly examined for the study. Although progress has been made, in order to overcome these obstacles and achieve the ultimate goal of combating polio worldwide, concerted efforts involving stricter policies, improved management, risk analysis, and improved communication are required (Khan & Qazi 2013).

The purpose of a qualitative study that was carried out in Pakistan's Khyber Pakhtunkhwa was to find out the general public's knowledge, behavior, and penetration of polio and its immunization. Partially, structured interviews were organized with 33 participants—eight females and 25 males—in polio centers and DHQ hospitals in Abbottabad and Mansehra between November 2015 and March 2016. Topical substance investigation uncovered three significant subjects: (a) data/information about polio and its inoculation, (b) disposition towards polio and its immunization, and (c) insight about polio and its inoculation. The results highlighted the significance of tending to holes in open information and conception of polio and immunization. Healthcare practitioners and policymakers must work mutually to eliminate polio in Pakistan. Upgrading public diligence and training about polio and its immunization is desirable for advancing general wellbeing and attain the objective of polio obliteration in the district (Murtaza et al., 2016).

The review studied 785 neurologists from the

Indian Foundation of Pediatrics, with intentions on those from Uttar Pradesh and Bihar, two states where polio transmission persists. Discoveries expose that practically all pediatricians thought about polio demolition an urgent need. As the central method of eradication, they advocated for intensifying routine vaccination efforts. Also, mass missions with deactivate Poliovirus Antibody (IPV) and bivalent Oral Polio Virus Immunization (OPV) were viewed as significant amplification. The review featured different boundaries to destruction, including the absence of mindfulness and certainty among guardians, strict and social convictions, and apprehension about secondary effects. The end accentuated the need to upgrade mindfulness, ingrain certainty, and expose hindrances to further develop polio immunization take-up among guardians (Chaudhary et al., 2011).

A fragmentary review was led to survey the effect of Pakistan's administration financed polio eradication program on the information, perspectives, and discernment (KAP) of the overall local area with respect to polio. A sum of 477 respondents who matured 25 to 60 years were reviewed. The findings indicated that, despite the fact that the majority of respondents were aware of polio and the significance of vaccination, there were knowledge gaps, with a significant number of respondents not comprehending crucial aspects like the disease's communicability. Trust in immunization groups and fulfillment with government mindfulness crusades shifted among respondents. The review recommends the requirement for upgraded instruction programs, better preparation for immunization groups, and expanded contribution of broad communications to work on open mindfulness and discernment with respect to polio and its avoidance (Atif et al., 2011).

This study investigates the convictions and viewpoints of Pakhtun wellbeing columnists in regards to oral polio immunization (OPV) acknowledgment and aversion inside their networks in the Khyber Pakhtunkhwa (KP) territory of Pakistan. 33 Pakhtun writers covering medical problems were consulted, and their

reactions were breaking down specifically. Findings: 1. Support for OPV: Members for the most part upheld OPV and pushed for its utilization, referring to their own encounters and comprehension of the dangers related with polio. 2. Barriers to Coverage: Financial and time constraints, journalists' lack of health literacy, and a lack of checks and balances within media organizations were all identified as obstacles to accurate OPV coverage. 3. Facilitators of Coverage: Press releases issued by OPV campaign officials were deemed crucial for accurate coverage. 4. Local area Factors: Absence of confidence in the public authority, security concerns, and strict convictions were distinguished as significant hindrances to OPV take-up. 5. Health Literacy: Participants complained that they were unable to provide accurate and comprehensive coverage of health stories, including polio-related ones, due to their own lack of health literacy. Recommendations: 1. Socially Delicate Training: Writers ought to get socially touchy preparation in neighborhood dialects at proper education levels to work on their comprehension and inclusion of medical problems. 2. Contribution in Local Area Mobilization: Direct association of columnists in local area assembly endeavors could assist with tending to OPV aversion and further develop immunization take-up. 3. Media Hierarchical Improvements: Media associations ought to address monetary and time imperatives and execute balanced governance to guarantee precise inclusion of medical problems, including polio inoculation crusades (Shah et al., 2019).

Pakistan and Afghanistan are the main nations where polio is endemic, with Pakistan revealing the most cases all around the world. - In high-risk Pakistani cities like Karachi, Pishin, and Bajaur, a mixed-methods study was done to find out what people knew, thought, and did about the polio vaccine and the efforts to eradicate it. - The review included quantitative information gathered through family studies and subjective information from center gathering conversations (FGDs) and top to bottom meetings (IDIs). - Moral endorsement was gotten from applicable advisory groups. - Test sizes were determined

independently for every area utilizing laid out recipes. - Quantitative information assortment included family interviews utilizing a pre-trying poll. - Subjective information assortment included FGDs and IDIs with chiefs at the family level and powerhouses at the local area level. - Information investigation was led involving SPSS for quantitative information and effective and content examination for subjective information. - The review tracked down persevering misguided judgments about polio regardless of some widespread information. - Among respondents, illiteracy rates were particularly high in Pishin. - The review's discoveries are urgent for illuminating system course and execution endeavors for polio destruction in Pakistan (Habib et al., 2017).

This examination concentrates on plans to address the high occurrence of polio among kids in ancestral areas of KPK, Pakistan, especially in South Waziristan. The purpose of the study was to raise awareness of the significance of the polio vaccine and learn why fewer people are getting it. Population and Sample: The entire population of South Waziristan was included in the study, but due to logistical constraints, only a 100-person sample was used. Information Assortment: An organized survey was created and dispersed by a MSc understudy from the ancestral region. Conversation discussions were likewise held to explain ideas and targets. Findings: - 79% of respondents supported campaigns to prevent polio. - 65% considered polio immunization as a type of family arranging. - Religious experts' restrictions were cited by 90% of respondents as a reason for refusing vaccination. - 88% accepted social and social circumstances added to misguided judgments about immunization. - 70% perceived polio as a viral sickness influencing kids under five, prompting fatalities. - 55% saw polio immunization as beneficial and here and there thought of it as UN-Islamic. Conclusion: - Absence of mindfulness, strict limitations, and social and social elements add to low polio inoculation rates. - Confusions about immunization viability and strict convictions ruin inoculation endeavors. - Tending to these boundaries through designated

mindfulness missions and local area commitment is pivotal for further developing immunization take-up and forestalling polio episodes in ancestral areas of Pakistan (Ahmad et al., 2016).

The review directed in Gaya Nearby Government Area of Kano State meant to survey information, behaviors, discernment, and convictions in regards to polio vaccination among guardians/parental figures. The WHO's Lot Quality Assurance Sampling (LQAS) method was used for the quantitative assessment, while Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) were used for the qualitative data collection. Results showed high mindfulness (95%) of polio antibodies, however just 66% had confidence in their viability against polio. Only 37% of respondents were aware of the Oral Polio Vaccine (OPV)'s protective doses, and 51% believed that administering more than four doses could result harmful. Rebelliousness remained at 20%, with "no parental figure assent" being the essential explanation (31%). Socio-segment data uncovered that most of respondents were moms (62%) and ranchers (90%), with low degrees of formal instruction. Seen reasons for poliomyelitis included heavenly convictions like fiendish spirits and black magic. Notwithstanding high mindfulness, there was a decrease in conviction with respect to the immunization's viability against polio. Acknowledgment of OPV was at 80%, differing with instruction and mindfulness levels. Objective behind dismissal included absence of guardian assent. All in all, the review features the requirement for heightened social activation exercises to address misinterpretations and increment acknowledgment of polio immunization, particularly in provincial regions with lower training levels (Vargha, 2014).

A review led in Quetta and Peshawar divisions of Pakistan planned to evaluate information, mentalities, and discernment towards polio vaccination. The outcomes uncovered that a huge piece of members had unfortunate information about polio, with elements like more established age, low training, rustic home, and region in Quetta division being related with lower information levels. Negative perspectives towards

polio vaccination were predominant among most of members, with absence of training and rustic home being critical elements. False religious beliefs, a lack of knowledge, the fear of vaccine-induced infertility, and security concerns were all common immunization barriers. These discoveries highlight the significance of designated schooling and mindfulness missions to address confusions and further develop acknowledgment of polio vaccination in these districts (Khan et al., 2016).

The review directed in three locale of Smack Valley, KPP, Pakistan, researched local area view of the oral polio antibody (OPV) and the commonness of OPV refusal. Subjective information uncovered different variables adding to OPV refusal, including worries about the recurrence of missions, insights connected with religion and global legislative issues. Quantitative data indicated that OPV refusal varied by district, with rates ranging from 0 to 33% among female health workers and 0.5 to 5.7% among mothers with children under the age of one. The review proposes that the Polio Annihilation Drive (PEI) ought to think about neighborhood values, strict convictions, and political translations to really address OPV refusal in the Smack Valley locale (Murakami et al., 2014).

Discussion

The research findings indicate that community perception in Bannu is caught between traditionalism and modern medical necessity. A critical discussion point is the "no parental consent" factor, which accounts for over 20% of non-compliance cases. This is often tied to the father's role as the primary decision-maker, who may be influenced by religious decrees or political distrust. Furthermore, the study notes that "heavenly beliefs" regarding evil spirits and witchcraft still persist as perceived causes of poliomyelitis in rural areas, directly competing with viral-science education.

Another vital aspect is the role of information channels. While 95% of parents may be aware of the vaccine, only 66% believe in its efficacy. This gap indicates that current awareness campaigns

are reaching the community but are not successfully *persuading* them. The "frequency of missions" is also a point of contention, with some residents becoming suspicious of the repetitive nature of vaccination drops.

Conclusion and Recommendations

Conclusion The eradication of polio in Bannu is not stalled by a lack of medicine, but by a lack of social acceptance. Misconceptions regarding fertility, religious permissibility, and political motives create a "threatening factor" that prevents total vaccine coverage. Unless the community perceives the vaccine as a culturally safe and religiously endorsed intervention, WPV will continue to circulate among children under five.

Recommendations

- **Socially Sensitive Training:** Provide journalists with training in local languages to improve the accuracy and cultural relevance of health reporting.
- **Community Mobilization:** Involve local powerhouses and religious scholars directly in the planning of campaigns to address "UN-Islamic" misconceptions.
- **Enhanced Education Programs:** Implement upgraded public training that specifically targets the communicability of the disease and counters the "family planning" myth.
- **Integrated Healthcare:** Move away from stand-alone polio drops toward a more holistic healthcare delivery system to reduce the community's suspicion of the "frequency of missions".

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