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EXPLORING KNOWLEDGE AND PERCEPTIONS OF POLIO DISEASE AND ITS IMMUNIZATION IN POLIO HIGH-RISK AREAS OF PAKISTAN

Sami Ullah[1], Humaira Abbas[2], Beenish Abid[3], Farah Naz[4], Sobia Saeed Ghaloo[5], Amjad Ali[6], Yousuf Qamar[7], Mian Ayaz Ul Haq [8*]

[1]Assistant Professor, Paediatrics Department, MTI Lady Reading Hospital, Peshawar
[2,3]Doctor, Govt. Women Medical Officer, Karachi
[4]Chief Women Medical Officer, Health Department, Sindh Government Special Leprosy Clinic, Karachi
[5]General Practitioner, Medicine Department, LUMHS Jamshoro, Sindh
[6]Lecturer, Bahria University of Health Sciences Sailor St Cantonment Karachi 74400 Sindh
[7]MBBS Graduate, Dow International Medical College, Karachi
[8*]Assistant Professor of Neurology, Hayatabad Medical Complex, Peshawar

***Corresponding Author:** Mian Ayaz Ul Haq
*E-mail: drayazulhaq@gmail.com

Abstract

Introduction: Poliomyelitis, commonly known as polio, remains a critical public health challenge in several regions of the world, with Pakistan being one of the few countries where the disease is still endemic.

Objectives: The main objective of the study is to find the knowledge and perceptions of polio disease and its immunization in polio high-risk areas of Pakistan.

Methodology of the study: This cross-sectional study was conducted at Lady Reading Hospital, Peshawar from June 2023 to January 2024. The study was conducted in designated polio high-risk areas in Pakistan, selected based on historical polio incidence data and vaccination coverage rates.A total of 75 patients, comprising individuals who had been affected by polio and their family members, were selected to participate in the study.Data were collected through purposive sampling technique.

Results: Data were collected from 75 participants. The study's demographic results showed a nearly balanced gender distribution, with 53.3% male and 46.7% female participants. Age-wise, the largest group was aged 31-45 (33.3%), followed by those aged 18-30 and 46-60 (both at 26.7%), and participants over 60 (13.3%). The study revealed that 80% of participants knew that polio is caused by a virus. Additionally, 70% were aware that polio primarily affects children under five, and 60% understood that polio can lead to permanent paralysis. Moreover, 75% of participants were aware of the polio vaccination schedule.

Conclusion: There is a general awareness of polio and its vaccination in high-risk areas of Pakistan, significant challenges persist due to misinformation, cultural beliefs, and logistical barriers. Targeted, culturally sensitive interventions and improved access to vaccination services are essential to enhance polio vaccination efforts.

Introduction

Poliomyelitis, commonly known as polio, remains a critical public health challenge in several regions of the world, with Pakistan being one of the few countries where the disease is still endemic. Despite significant global efforts to eradicate polio, certain high-risk areas within Pakistan continue to experience outbreaks, posing a threat to both national and international public health [1]. The persistence of polio in these regions is influenced by a complex interplay of factors, including socio-political instability, vaccine misinformation, cultural beliefs, and logistical challenges in healthcare delivery. Except for Pakistan and Afghanistan, wild poliovirus type 2 was eradicated by the global campaign initiated in 1988 by GPEI (global polio eradication initiative); simultaneously vaccination with Oral live Type2 Sabin strain has been withdrawn since April2016 from all trivalent oral Polio vaccines. Pakistan eliminated a large part of the burden, while in 1994 it offered complimentary dial mechanism was first used, GPEI (Global Point to Ends Fragmentation) [2,3]. Nevertheless, emphasis reduction and national effort of putting efforts is not enough because the circulation status shows that Pakistan remains infected with wild poliovirus type 1 (WPV1), along environmental need circulating vaccine-derived by cVDPV2 [4]. There were the fewest number of cases in 2017; however, polio has resurged with more cases seen every year starting from there-12 highly symptomatic infections happened last year while a whopping 147 people reported being infected and one case was detected this time [5]. During 2020, poliovirus circulation was detected in high risk districts including Karachi block, Northern Sindh block,Southern Punjab block,Peshawar and Quetta blocks of the country by Pakistan Polio Surveillance System. The virus is circulating in 2022, but to date there are only 20 positive cases and they have all been restricted to the Waziristan area located in hard-to-reach Pakistan [6].

In Pakistan, the GPEI has been carrying out multiple vaccination campaigns each year in order to halt transmission of polio. There are 250,000 front-line health workers that also go door-to-door to vaccinate every single child under five years old with the trivalent (all three serotypes included) oral polio vaccine [7]. Apart from OPV administered during campaigns, 4 doses of the vaccine are also available at birth and ages of 04/6,000 years or older (EPI) program routine immunization [8]. To improve immunity among children, in 2015 the Government of Pakistan also included one dose of Injectable Polio Vaccine (IPV) to be given at 14 weeks and introduced Inactivated poliovirus vaccine or IPV into its national EPI. Every child must receive the adequate number of polio doses at each campaign and routine immunization session to rid Pakistan from this crippling disease. Otherwise polio transmission will continue indefinitely in Pakistan [9].

Objectives

The main objective of the study is to find the knowledge and perceptions of polio disease and its immunization in polio high-risk areas of Pakistan.

Methodology of the study

This cross-sectional study was conducted at Lady Reading Hospital, Peshawar from June 2023 to January 2024. The study was conducted in designated polio high-risk areas in Pakistan, selected based on historical polio incidence data and vaccination coverage rates.A total of 75 patients, comprising individuals who had been affected by polio and their family members, were selected to participate in the study. Data were collected through purposive sampling technique. Efforts were made to ensure a diverse sample, including various age groups, genders, and socio-economic backgrounds to capture a wide range of perspectives.

For quantitative data collection, structured questionnaires were administered to the 75 participants to assess their knowledge about polio, sources of information, and attitudes towards polio vaccination. The questionnaire included multiple-choice and Likert scale questions covering demographic information, awareness of polio symptoms and transmission, knowledge of polio vaccination schedules, sources of polio-related information, healthcare providers, media, community leaders, perceptions of polio vaccine safety and efficacy, and barriers to vaccination. In

addition to the questionnaires, in-depth interviews were conducted with a subset of 20 participants selected from the 75 patients to gain deeper insights into their beliefs and experiences related to polio and its immunization. These interviews were semi-structured, allowing for flexibility in exploring specific issues raised by participants while ensuring that key topics were covered. Interview questions focused on personal experiences with polio, cultural and religious beliefs influencing vaccination decisions, community attitudes towards polio campaigns, and suggestions for improving vaccination efforts.

Data were analyzed using SPSS v29. Descriptive statistics were used to summarize the demographic characteristics of the participants and their responses to the questionnaire. Cross-tabulations and chi-square tests were performed to examine the associations between demographic variables and knowledge or perceptions about polio and its vaccination.

Results

Data were collected from 75 participants.The study's demographic results showed a nearly balanced gender distribution, with 53.3% male and 46.7% female participants. Age-wise, the largest group was aged 31-45 (33.3%), followed by those aged 18-30 and 46-60 (both at 26.7%), and participants over 60 (13.3%). In terms of education, 60% of participants had secondary or higher education, while 40% had primary education or were illiterate.

Table 1: Demographic Characteristics of Participants

Demographic Variable	Number of Participants (N=75)	Percentage (%)
Gender		
Male	40	53.3
Female	35	46.7
Age		
18-30	20	26.7
31-45	25	33.3
46-60	20	26.7
>60	10	13.3
Education Level		
Primary or Illiterate	30	40
Secondary or Higher	45	60

The study revealed that 80% of participants knew that polio is caused by a virus. Additionally, 70% were aware that polio primarily affects children under five, and 60% understood that polio can lead to permanent paralysis. Moreover, 75% of participants were aware of the polio vaccination schedule.

Table 2: Knowledge about Polioamong participants

Knowledge Item	Number of Participants (N=75)	Percentage (%)
Polio is caused by a virus	60	80
Polio primarily affects children under five	53	70
Polio can lead to permanent paralysis	45	60
Aware of polio vaccination schedule	56	75

The study identified healthcare providers as the primary source of information for 50% of participants. Media sources such as TV and radio informed 30% of participants, while community leaders were a source for 20%. Social media played a role for 25% of participants, and 13.3% received information from other sources.

Table 3: Sources of Information about Polio

Source of Information	Number of Participants (N=75)	Percentage (%)
Healthcare providers	38	50
Media (TV, radio)	23	30
Community leaders	15	20
Social media	19	25
Other	10	13.3

The study revealed that 65% of participants believed in the safety of the polio vaccine, while 20% had concerns about side effects and 15% were unsure about its safety. Community reservations due to religious beliefs were noted by 30% of participants, and 20% were influenced by traditional healers. Barriers to vaccination included fear of side effects (40%), lack of access to vaccination centers (35%), distrust in healthcare providers (25%), and logistical challenges such as distance and transportation (20%).

Table 4: Perceptions of Polio Vaccination

Perception Item	Number of Participants (N=75)	Percentage (%)
Belief in polio vaccine safety	49	65
Concerns about vaccine side effects	15	20
Unsure about vaccine safety	11	15
Community reservations due to religious beliefs	23	30
Influence of traditional healers	15	20
Barrier		
Fear of vaccine side effects	30	40
Lack of access to vaccination centers	26	35
Distrust in healthcare providers	19	25
Logistical challenges (distance, transportation)	15	20

The study's participants suggested several ways to improve polio vaccination efforts. Increasing community engagement was recommended by 45% of participants, enhancing awareness campaigns by 40%, and improving access to vaccination through mobile clinics and local centers by 35%.

Table 5: Suggestions for Improving Vaccination Efforts

Suggestion	Number of Participants (N=75)	Percentage (%)
Increase community engagement	34	45
Enhance awareness campaigns	30	40
Improve access to vaccination (mobile clinics, local centers)	26	35

Discussion

The findings of this study shed light on the current state of knowledge and perceptions regarding polio disease and its immunization in high-risk areas of Pakistan. The results highlight several critical factors that influence polio vaccination uptake and identify areas where targeted interventions can enhance public health efforts to eradicate polio [10].The study revealed that while a majority of participants (80%) are aware that polio is caused by a virus, there are still gaps in comprehensive knowledge about the disease. Only 60% of participants knew that polio could lead to permanent paralysis, indicating a need for more detailed education about the severe consequences of the disease [11]. The awareness of the polio vaccination schedule was relatively high (75%), suggesting that basic information about vaccination is reaching the population, but further efforts are required to ensure this knowledge translates into action.Healthcare providers were the primary source of information for 50% of participants, which underscores the importance of leveraging healthcare professionals in vaccination campaigns [12]. However, the significant role of media (30%) and community leaders (20%) indicates that a multi-faceted approach to information

dissemination is necessary. The study also found that 25% of participants had received misinformation about polio vaccines, particularly through social media. This finding highlights the urgent need to address and counteract false information, which can undermine vaccination efforts.Perceptions of vaccine safety are crucial for vaccination uptake [13]. While 65% of participants believed in the safety of the polio vaccine, a substantial minority (20%) expressed concerns about potential side effects, and 15% were unsure. These concerns can significantly hinder vaccination efforts and need to be addressed through transparent communication and education[14]. Cultural and religious beliefs also play a significant role, with 30% of participants mentioning community reservations due to religious beliefs and 20% influenced by traditional healers. This suggests that vaccination campaigns must be culturally sensitive and involve religious and community leaders to build trust and acceptance.The study identified several barriers to vaccination, including fear of side effects (40%), lack of access to vaccination centers (35%), and distrust in healthcare providers (25%). Logistical challenges, such as long distances to vaccination sites and lack of transportation, were mentioned by 20% of participants [15]. These barriers highlight the need for more accessible vaccination services, such as mobile clinics and local vaccination centers, as well as efforts to build trust in healthcare providers.Participants provided valuable suggestions for improving polio vaccination efforts. Increasing community engagement through trusted local leaders was recommended by 45% of participants, indicating the importance of involving community figures in health initiatives [16]. Enhancing awareness campaigns through various media channels was suggested by 40% of participants, reflecting the need for widespread and consistent health messaging. Additionally, improving access to vaccination by setting up more mobile clinics and local vaccination centers was recommended by 35% of participants, underscoring the logistical challenges faced by many communities [17].The findings of this study have several implications for public health strategies aimed at eradicating polio in Pakistan. First, there is a need for targeted education campaigns that provide comprehensive information about polio and its vaccination, addressing both knowledge gaps and misconceptions. Second, combating misinformation through reliable sources and community influencers is critical to building trust in vaccination programs.

Conclusion

There is a general awareness of polio and its vaccination in high-risk areas of Pakistan, significant challenges persist due to misinformation, cultural beliefs, and logistical barriers. Targeted, culturally sensitive interventions and improved access to vaccination services are essential to enhance polio vaccination efforts. Addressing these issues can significantly contribute to the eradication of polio in Pakistan.

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