

## Challenges Linked to Post-Polio-Paralysis in Khyber Pakhtunkhwa Region

Muhammad Kamran Khan CPO, MPH<sup>1</sup>, Alamgeer Khan CPO, MPH<sup>2\*</sup>

<sup>1</sup>Dit Medical, Jeddah Saudi Arabia

<sup>2</sup>Prosthetics and Orthotics Department, The Indus Hospital, Muzaffargarh, Pakistan

### Correspondence\*

**Address:** Prosthetics and Orthotics Department, The Indus Hospital, Muzaffargarh, Pakistan |

**e-mail:** khalamgeer66@yahoo.com

### Abstract

**Background:** Poliomyelitis is a highly infectious viral disease often causing permanent paralysis. Post-Polio Paralysis (PPP) involves the delayed onset of new or worsening neuromuscular symptoms years after the initial attack. Polio survivors face numerous physical disabilities and significant social, financial, and human rights barriers.

**Aims:** To identify the challenges faced by individuals with PPP in the Khyber Pakhtunkhwa region.

**Methods:** The study employed a cross-sectional survey design with a sample size of n=200, selected through non-probability convenience sampling. Data were collected using the Post-Polio Clinic Questionnaire and analyzed with SPSS 22.

**Results:** The gender distribution was 21.50% female and 78.50% male. New health and physical problems (neurological, arthritis, and physiological) were observed in 64.5% (n=129) of participants. Aggravated previous complications, such as pain, fatigue, and muscular atrophy, were reported by 91.5% (n=183). Difficulty performing heavy tasks was noted by 49.5% (n=99). Using public transport was a challenge for 46.5% (n=93), and driving a car was deemed impossible by 70% (n=140). Using an Indian commode as a toilet was a complication for 58% (n=116) of participants.

**Conclusion:** The study reveals significant health and daily life challenges for polio survivors in Khyber Pakhtunkhwa, including a high prevalence of new and worsening neuromuscular symptoms, aggravated complications like pain and fatigue, and difficulties with heavy tasks, public transport, driving, and using certain toilets. These findings underscore the urgent need for targeted interventions to improve the quality of life for polio survivors by addressing their physical health and social and financial barriers.

**Keywords:** Quality of life, Post-Polio Paralysis, Polio Survivors

### Article History

Received date: 29-06-2024

Revised date: 27-10-2024

Accepted date: 30-10-2024



Journal Prosthetics Orthotics and Science Technology (JPOST)

e-ISSN 2962-8016

Organized by [Department of Prosthetics and Orthotics](#)

Published by [Poltekkes Kemenkes Jakarta I](#)

email: jpost@poltekkesjakarta1.ac.id

## Introduction

Poliomyelitis (polio) is a highly infectious viral disease caused by the poliovirus, which often leads to permanent paralysis. The virus enters the body, multiplies in the gut, and can invade the nervous system, resulting in paralysis in a small proportion of cases, which is often permanent (1).

The disease presents a variety of symptoms, often beginning as a minor illness, which may be followed by a few symptom-free days before progressing to a more serious condition. The predominant sign of flaccid paralysis results from damage to the lower motor neurons, and the extent of muscle involvement can vary widely among individuals. Muscle weakness is typically maximal within a few days after the onset of the paralytic phase, with maximum recovery generally occurring within six months; however, residual paralysis can last much longer, potentially for life (2).

Historically, polio was a significant public health concern, particularly affecting children under 5 years of age. The polio virus spreads primarily through the fecal-oral route, with outbreaks occurring in communities with inadequate sanitation. Up to 75% of poliovirus infections in children are asymptomatic; however, about 24% of cases may present with low-grade fever and sore throat. The disease's potential to cause widespread outbreaks and its severe consequences led to intensive vaccination efforts in the mid-20th century, culminating in the near eradication of polio in many parts of the world.

Despite significant progress in vaccination and prevention, polio remains endemic in some regions, particularly in parts of Africa and South Asia. Survivors of polio often face long-term health challenges, including Post-Polio Syndrome (PPS), which can manifest years after the initial infection. PPS is characterized by new muscle weakness, fatigue, pain, and atrophy, significantly impacting the quality of life for many survivors. Understanding the long-term implications of polio and the factors influencing the emergence of PPS is crucial for providing

effective rehabilitation and support services for those affected.

This study aims to investigate the prevalence and characteristics of new health issues experienced by polio survivors, particularly in the context of cultural and logistical barriers to rehabilitation services in the Khyber Pakhtunkhwa region. By examining the challenges faced by this population, the study seeks to contribute valuable insights that can inform future healthcare strategies and interventions.

## Methods

The study was conducted in various hospitals and rehabilitation centers in Khyber Pakhtunkhwa (KPK) and the merged areas of Ex-FATA. Data were collected from the PRSP (PIPOS Rehabilitation Services Program) centers and Government Rehabilitation centers in the merged areas. Specifically, data were gathered from PRSP centers in Peshawar, D.I. Khan, Bannu, Swat, Timergarah, and Buner, as well as from Government Rehabilitation centers in North Waziristan and Landi Kotal.

## Results

The demographic data of the study group shows that total participants in this study were 200 (100%). The participants were divided into four age groups that include 18-25, 26-30, 31-35 and Above 35 years out of 200 patients n=57 (28.5%) was from age 18-25 group. The total n=59 (29.5%) was having age 26-30, the other category n=57 (28.5%) was from 31-35 age group. The last category that includes n=27 (13.5%) were above 35 years. The entire study sample was divided into male and female. The gender presentation among the participants were 21.50% female (n= 43) and 78.50% male (n= 157).

All the patients were asked about their marital status, and they answered as married, single, divorced and widowed. The distribution among the participants was 55.5% were married which means n=111 out of 200. A total of 40.5%

were single, that is n=81 out of 200. The percentile of divorced and widowed is combined 4% that is 2.5% and 1.5% respectively. Their frequency among the participants was 5 and 3 respectively.

Table 1. Demographic Data

No	Variable	Category	Freq. (%)
1.	Age	18-25 (years)	57 (28.5%)
		26-30 (years)	59(29.5%)
		31-35 (years)	57(28.5%)
		Above 35 (years)	27(13.5%)
2.	Gender	Male	157(78.5%)
		Female	43(21.5%)
3.	Marital status	Married	111(55.5%)
		Unmarried	81(40.5%)
		Divorced	5(2.5%)
		Widowed	3(1.5%)
4.	Educational Status	Below Matric	69(34.5%)
		Matric	54(27%)
		Intermediate	48(24%)
		Bachelors	20(10%)
		Masters and above	9(4.5%)
5.	Employment Status	Full Time Employee	53(26.5%)
		Part Time Employee	44(22%)
		Jobless	58(29%)
		Student	35(17.5%)
		Retired Employee	10(5%)

The study participants faced several challenges that emerged both as lingering effects of polio and as new issues over time, often exacerbating previous health and social limitations. The data reveals the demographic spread and provides insight into the distinct "new" problems they experienced:

### 1. Physical and Health-Related Challenges:

A significant number of participants (55%) reported new neurological issues, such as additional muscle weakness and fatigue. These symptoms are consistent with Post-Polio Syndrome (PPS), which commonly appears later in life and adds to the initial disability from polio. Many of these issues likely began during the participants' midlife, with the age distribution showing that 71.5% of participants were aged between 18 to 35 years, indicating they may face these new challenges earlier than expected.

About 35% of the participants developed joint arthritis, an often painful and debilitating condition that restricts mobility. This condition can arise from the chronic stress placed on the joints over years due to previous polio-related muscle imbalances, further impacting their independence.

Approximately 10% of participants experienced physiological changes such as weight gain, obesity, and dyslipidemia. These issues are common with aging and are compounded by mobility restrictions and reduced physical activity. Obesity and dyslipidemia may also increase the risk of cardiovascular issues, creating additional health concerns for polio survivors.

### 2. Gender-Specific and Accessibility Challenges:

The study included 78.5% males and 21.5% females, revealing a significant gender disparity in participation. This may be due to cultural and logistical barriers limiting female access to rehabilitation centers, especially in rural areas. Female participants might experience greater challenges in accessing consistent healthcare and rehabilitation services, which could delay the identification and treatment of new health problems.

### 3. Socioeconomic and Employment Challenges:

Only 14.5% of participants had completed a bachelor's degree or higher, and 29% were jobless, while only 26.5% had full-time employment. Limited education and

employment status impact the financial stability of polio survivors, potentially restricting their ability to access specialized healthcare, assistive devices, or physical therapy to manage their new symptoms.

While 55.5% were married, 44.5% were unmarried, divorced, or widowed. Those without marital support might face additional social and financial challenges, making it more difficult to manage new or worsening health conditions.

## Discussion

The results of this study indicate that the male gender is predominantly affected by the poliovirus, comprising approximately 78% of the study participants. This finding suggests either a greater susceptibility of males to the virus or a bias stemming from the study's setting, as it was conducted in rehabilitation centers where access for females is often restricted due to cultural and logistical barriers. In rural areas of FATA and KPK, female access to rehabilitation services is limited, particularly due to the unavailability of female staff and societal constraints. Wickford J. et al. (2008) highlighted that barriers to physical rehabilitation in Afghanistan are influenced by gender issues, cultural traditions, religious factors, and limitations in access to information (14).

New health and physical issues have emerged among polio survivors, including neurological problems, joint arthritis, and physiological changes, all indicative of Post-Polio Syndrome (PPS). In our study, 129 participants reported new changes since their initial disability, with many noting that these changes began to appear in midlife or later—often several decades after the initial polio infection. This aligns with common patterns of PPS onset. Among the 129 patients, 55% (n=71) noted neurological changes, including increased muscle weakness and a decline in motor function. Additionally, 35% (n=45) reported joint arthritis as a significant new physical change, while 10% (n=13) experienced physiological changes such as weight gain,

obesity, and dyslipidemia, introducing further complications.

Our findings differ from those reported by Kidd et al., who found that among 283 polio survivors, 63% had clinical arthritis (13). Similarly, Tsai et al. reported new neurological issues in 80% of their patients (14), while Gawane et al. noted a prevalence of dyslipidemia and obesity at 61.3% among a group of 88 polio survivors (15).

Pain, fatigue, and muscle atrophy were collectively reported by 91.5% of participants in this study, closely resembling the 91% reported by Steolb et al. (16). However, our results regarding pain occurrence differed from Vallbona et al., who reported pain in 71% of non-device users and 19% of device users among PPS patients; in our study, 49% of participants experienced pain (17).

## Conclusion

This study enhances the understanding of Post-Polio Syndrome in Khyber Pakhtunkhwa. A cross-sectional survey utilizing a post-polio clinic questionnaire revealed the challenges linked to post-polio paralysis in the region. High frequencies of typical post-polio symptoms—including muscle weakness, fatigue, pain, and muscle atrophy—were identified. The findings underscore an increased need for assistive devices and support with daily living activities, as well as significant impacts on the lifestyle and employment of individuals with a history of poliomyelitis.

## References

- Burgess, E.M, and F.A. Matsen, 3, “Determining Amputation Levels in Peripheral Vascular Disease,” *J. Bone and joint surgery*, 63A:1981, pp. 1493-1497.
- Dowdle WR, Birmingham E. The biologic principles of poliovirus eradication. *J Infect Dis.* 1997; 175(1): p. 286-292.
- Fox, M. H., Krahn, G. L., Sinclair, L. B., & Cahill, A. (2015). Using the international classification of functioning, disability and health to expand understanding of paralysis in the United States through

- improved surveillance. *Disability and health journal*, 8(3), 457-463. Farquhar M. Elderly people's definitions of quality of life. *Social Science & Medicine*. 1995 Novembe; 41(10): p. 1439-1446.
- Gonzalez H, Olsson T, Borg. Management of postpolio syndrome. *The Lancet Neurology*. 2010; 9(6): p. 634-642.
- Groce E, Banks M, Steinc M. Surviving polio in a post-polio world. *Social Science & Medicine*. 2014 April; 107: p. 171-178
- Fox M, Krahn L, Sinclair B. Using the international classification of functioning, disability and health
- Hammarlund, Lexell J, Brogardh C. Perceived consequences of ageing with late effects of polio and strategies for managing daily life: a qualitative study. *BMC Geriatrics*. 2017 Aug; 17(1): p. 179-88.
- Kanwal, Hussain, Manan S, Perveen S. Regression in polio eradication in Pakistan: A national tragedy. *Journal of Pakistan Medical Association*. 2016 March; 66(3).
- Kroger, Wolfe C. *Epidemiology and Prevention of Vaccine Preventable Diseases. (The Pink Book)*. 13th ed.: Public Health Foundation; 2015.
- Lin K, Lim Y. Post-poliomyelitis syndrome: case report and review of the literature. *Ann Acad Med Singapore*. 2005 Aug; 34(7): p. 447-9.
- Mehndiratta M, Mehndiratta, Pande. Poliomyelitis Historical Facts, Epidemiology, and Current Challenges in Eradication. *Neurohospitalist*. 2014 Oct; 4(4): p. 223-229.
- MELNICK J. Current Status of Poliovirus Infections. *CLINICAL MICROBIOLOGY REVIEWS*. 1996 July; 9(3): p. 293-300.
- Nathanson, Kew M. From Emergence to Eradication: The Epidemiology of Poliomyelitis Deconstructed. *American Journal of Epidemiology*. 2010 December; 172(11): p. 1213- 1229.
- Ochmann, Roser. Our World in Data. [Online].; 2019 [cited 2019 Nov. Available from: <https://ourworldindata.org/polio>.
- Organization WH. [www.WHO.int](http://www.WHO.int). [Online].; 2019 [cited 2019 Nov. Available from: <https://www.who.int/news-room/fact-sheets/detail/poliomyelitis>.
- Shibuya K, Murray C. Poliomyelitis. In Lopez AD, Mathers C. *The global epidemiology of infectious diseases*. Geneva: World Health Organization; 2004. p. 111-49.
- Trojan DA CN. Post-poliomyelitis syndrome. *Muscle Nerve*. 2005; 31: p
- Winberg C FUCGRJLJ. Physical activity in persons with late effects of polio: a descriptive study. *Disability Health Journal*. 2014; 7(3): p. 302-8.
- Yang, Lee, Kim. Factors Associated with Reduced Quality of Life in Polio Survivors in Korea. *PLoS One*. 2015; 10(6).