



Original Research

The Response to the Poliomyelitis Outbreak in the Gaza Strip

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Abstract

Background: Since October 7th, 2023, the Gaza Strip has been subjected to unprecedented Israeli military operations with serious implications for people's health and the healthcare system. In July 2024, a polio outbreak emerged amidst mass displacement, lack of sanitation, and a decline in routine vaccinations, increasing the risk of rapid disease spread among unvaccinated children. This study undertakes a policy analysis of the response measures implemented to address this outbreak.

Methodology: This analysis was based on two main methods: a desk review of relevant published and grey literature and in-depth interviews with key informants.

Results: The polio eradication response plan was developed by the Palestinian Ministry of Health (MoH) in cooperation with international and national organizations. The response plan involved vaccinating the target population (children under 10 years of age), empowering the workforce, integrating other health services, utilizing an outreach approach, and enhancing monitoring through surveillance.

Conclusion: Overall, the response plan to the polio outbreak was generally successful, despite facing several challenges, including infrastructure damage, the collapse of the healthcare system, widespread malnutrition, and continuity of hostilities.

Keywords: Gaza, governance, Palestine, policy analysis, Poliomyelitis.

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Introduction

Poliomyelitis was eradicated in Palestine 25 years ago. However, in July 2024, poliovirus was discovered in sewage water in several locations in the Gaza Strip, leading to a declared poliovirus outbreak by the Palestinian Ministry of Health (MoH). An adequate and rapid response was essential to prevent further disease spread in this fragile context. The outbreak was linked to deteriorating water and sanitation infrastructure and practices, disrupted healthcare services, and diminished vaccination rates amid ongoing conflict and frequent mass displacement of the population of Gaza Strip. The resurgence of poliomyelitis, confirmed by the routine epidemiological surveillance system in Gaza, signaled an urgent public health crisis. Environmental monitoring further showed the presence of poliovirus in wastewater, exacerbating concerns of widespread outbreaks. The conflict-related conditions, including population displacement and overcrowded shelters, posed high risks for rapid disease transmission and poor sanitation. Moreover, low vaccination coverage due to disrupted healthcare services highlighted the urgency of the situation (1).

To protect children under ten, a three-round emergency vaccination campaign was conducted utilizing the novel oral polio vaccine type 2. The first round, in September 2024, effectively vaccinated over 558,000 children, covering roughly 95% of the target population (2). On November 5, 2024, the second phase reached 556,774 children under the age of ten, and the third round vaccinated 602,795 children under the age of ten (3). Vitamin A supplements were also used in the campaigns to help children's general immunity (4). This analysis aims to examine the response to the poliomyelitis outbreak in the Gaza Strip, focusing on the strategies employed and the challenges encountered in the process.

Methods

The methods consisted of a desk review of relevant published and grey literature and in-depth interviews with key informants (KIIs). A combination of methods was used to gain an in-depth understanding of the process and to triangulate the sources of data. The desk review included relevant reports produced by the World Health Organization (WHO), United Nations Children's Fund (UNICEF), and MoH, in addition to several published articles. Two KIIs were conducted: one with a key health officer at UNICEF and another with the director of primary health services at MoH. The interview guide was built based on the desk review.

Findings

Poliomyelitis response

The campaign's success was underpinned by several enabling factors. Strong community engagement, achieved through the mobilization of local leaders and NGOs, enhanced public trust and ensured widespread vaccine acceptance. Additionally, the strategic use of mobile teams and integration of services, such as nutritional screening and vitamin A supplementation, allowed healthcare workers to address broader child health needs beyond polio immunization. Cross-sectoral collaboration facilitated logistical support, particularly in cold chain management and supply chain monitoring, despite the blockade and damaged



infrastructure. Moreover, surveillance systems were rapidly scaled up to identify virus circulation and target interventions. However, gaps remained in reaching unregistered displaced populations, and reliance on manual tracking limited operational efficiency. The use of real-time digital monitoring tools was minimal, which could have further streamlined the response under crisis conditions.

In response to the outbreak, a polio response policy and plan was prepared and implemented to combat the spread of polio. The measures taken by the Palestinian MoH and international health partners, namely WHO and UNICEF, included launching three rounds of polio vaccination campaigns targeting children under ten years old in the Gaza Strip. The first, second, and third phases were successfully implemented (5). Furthermore, the response plan included the provision of vitamin A supplementation with other health services to enhance the effectiveness of the vaccination, as well as nutritional screenings for children between 2-10 years old (6). Moreover, United Nations organizations advocated for a pausing of military operations and a humanitarian ceasefire to reach children in conflict-affected areas and ensure the safety of health workers (7). An interviewee indicated that *“advocacy measures at the regional level were initiated from the planning phase to the monitoring phase, and the Israeli side was involved in each phase to assure security clearance during the campaign”*.

Additionally, efforts were made to disseminate information to the community about polio prevention and the importance of vaccination, as well as about proper hygiene practices. However, the effectiveness of these initiatives concerning proper hygiene practices was limited due to poor living conditions in overcrowded shelters and inadequate sanitation facilities (8).

Challenges of the poliomyelitis response plan

The poliomyelitis response plan encountered several operational and logistic challenges. The ongoing military operations and high security risk hindered the safe delivery of vaccines and movement of health teams. In addition, certain areas, especially in northern Gaza in the second round and Rafah in the first round, were inaccessible, preventing vaccine distribution to vulnerable populations (9). Furthermore, the frequent mass displacements left families living in overcrowded shelters, making it difficult to locate and provide the vaccine to children. Also, poor sanitation and limited access to clean water exacerbated the situation (10). Importantly, the healthcare infrastructure was already overwhelmed by casualties and lacked resources to manage the polio campaign. Many health workers suffered from burnout and fatigue and faced restrictions on safe access to affected areas (11). Moreover, the supply chain was challenging as the arrival and distribution of vaccines were delayed, and cold chain management for ensuring proper storage and transportation of vaccines was disrupted. Additionally, there was some public distrust and reluctance to vaccinate children because of inadequate communication and misinformation about the importance of the campaign within the existing political conditions.



Governance of poliomyelitis response

Good governance of the polio response in Gaza and effective coordination among local, national, and international stakeholders was essential. The MoH led the planning and implementation of the vaccination campaigns. It ensured coordination among local and international organizations, deployed mobile health teams to reach underserved populations, and utilized community leaders and NGOs to foster a trusting relationship with local communities. In addition, the MoH established steering and technical committees with members from WHO, UNICEF, and UNRWA to prepare and monitor the response plan. There was obvious international collaboration as WHO provided technical guidance and helped maintain global standards for vaccination coverage and disease surveillance processes. UNICEF played a crucial role in logistics, securing vaccine supplies, and distributing them. The Global Polio Eradication Initiative (GPEI) coordinated funding, resources, and expertise to strengthen the campaign's impact and collaborated with local actors to track and respond to outbreaks quickly (12). An interviewee stated that *"there was remarkable support from regional offices of WHO and UNICEF at both the funding and technical support levels"*.

Ethical dilemmas

The ethical concerns extended beyond the individual consent. The selective focus on the polio vaccination campaign in Gaza in 2024 presented an ethical dilemma, prioritizing global health concerns over the overwhelming health needs of Gazans such as mental health, malnutrition, and other types of infectious diseases that have been already exacerbated by the ongoing conflict. A disproportionate focus on polio, potentially influenced by donor interests and international targets, sidelined chronic diseases, mental health, and maternal care services, leaving critical health gaps unaddressed. Furthermore, while informed consent was bypassed under public health emergency justifications, this created friction with community values and perceptions of coercion. Mistrust towards health authorities, amplified by political fragmentation and misinformation, was a recurrent theme in key informant interviews. In addition, health workers faced psychological strain, moral distress, and physical danger. At least five incidents were reported where vaccination teams were delayed or evacuated due to active bombardments, as reported by WHO and OCHA field logs (13, 14). Such realities underscore the urgent need for a globally agreed ethical framework guiding immunization efforts in high-risk, non-consensual contexts. Moreover, the lack of equitable vaccine access in closed zones disproportionately affected marginalized communities, raising further equity concerns. This has led to conflict between international and local health agendas (15). Furthermore, there was concern about the autonomy and consent of the clients in a conflict zone where communication channels are limited and misinformation about vaccines is widespread. Promoting vaccination may conflict with respecting parental autonomy and the right to make informed decisions, especially when families are under duress or lack accurate information (16). An interviewee stated that *"the technical committee decided not to get consent from the children and this is obligatory vaccination due to the high risk associated with possible spreading of the virus"*. Moreover, ensuring equitable access to vaccines in a highly fragmented and insecure region is harder to achieve. Limited access to certain areas



due to conflict can exacerbate health inequities, leaving vulnerable populations at higher risk (17).

Importantly, there were obvious risks to health workers, as deploying them in high-risk areas to vaccinate children, knowing their safety is at risk, was a significant concern. Numerous reports indicate that healthcare workers have been affected by direct attacks and casualties. As of early May 2025, it was reported that over 1,400 healthcare workers have been killed in Gaza since the escalation of the conflict in October 2023 (13) due to attacks on hospitals, clinics, and targeting ambulances. Moreover, as of December 2024, it was reported that more than 330 healthcare workers had been detained (14). Balancing the moral imperative to protect health workers with the urgent need to vaccinate children in conflict zones is a persistent challenge. In some locations outside the declared humanitarian zone, there was no coordination with the Israeli Forces, which subjected health workers to high-security risk. In addition, people's trust in institutions was low, and thus balancing respect for community skepticism with the need to achieve high vaccination coverage was a real challenge. Moreover, protecting the privacy and confidentiality of data was a real challenge due to the potential security concerns of the family members of children targeted by the campaign (18).

Conclusion

The polio outbreak in Gaza in July 2024 underscored the critical intersection of public health and humanitarian crises. The polio response campaign faced significant challenges, including ongoing conflict, damaged infrastructure, and logistical constraints. The success in mobilizing resources and the collaboration between local and international partners were crucial in containing the outbreak.

However, the response was hindered by security risks, vaccine accessibility issues, and ethical dilemmas related to consent and equity. Moving forward, strengthening healthcare infrastructure, enhancing disease surveillance, improving coordination among stakeholders, and addressing vaccine hesitancy through community engagement are essential in mitigating future outbreaks. Additionally, advocating for the protection of healthcare workers and ensuring humanitarian access remain critical priorities. The Gaza polio response serves as a vital case study in navigating public health interventions within complex conflict settings, offering key lessons for global health governance and emergency preparedness. To enhance future responses to similar health crises, it is highly important to strengthen health system resilience through improving infrastructure, allocation of resources, and emergency preparedness and response capacities (19). There is a need for strong humanitarian diplomacy and advocacy for health and protection of civilians and healthcare teams and infrastructures during times of conflict.



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