

Peer Review

Review of: "Integrated Determinants of Persistent Wild Poliovirus Transmission in Pakistan and Afghanistan: The Roles of Cross-Border Mobility, Hard-to-Reach Populations, and Micro-Transmission Hotspots, 2010-2025"

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Peer Review Feedback Report

Manuscript Title: **Integrated Determinants of Persistent Wild Poliovirus Transmission in Pakistan and Afghanistan, 2010–2025**

Recommendation: Accept with Minor Revisions

Thank you for the opportunity to review this important manuscript. The paper provides a valuable synthesis of the factors sustaining wild poliovirus transmission in Pakistan and Afghanistan and makes a compelling argument for considering the region as a single epidemiological block. The analysis is timely and relevant for global eradication efforts.

I recommend acceptance with minor revisions, mainly aimed at strengthening methodological transparency, clarifying a few technical points, and enhancing the discussion.

1. Methodology and Data Transparency

Search strategy

To enhance reproducibility, it would be helpful to include the detailed Boolean search strings used for each database (e.g., PubMed, Embase) in a supplementary table or appendix. This will make the scoping review process clearer and allow others to replicate the search if needed.

PRISMA flow diagram

Please ensure that Figure 1 (PRISMA flow chart) clearly presents the numbers at each stage—identification, screening, eligibility, and final inclusion. In particular, providing brief reasons for the exclusion of the 248 full-text articles would strengthen transparency.

Context for genomic findings

The finding that more than 85% of viral isolates show cross-border linkage is central to the argument that Pakistan and Afghanistan function as a single epidemiological block. It would therefore help readers if the total number of sequenced isolates (N) from the 2015–2025 period was indicated so that this percentage can be interpreted in context.

2. Technical Clarifications (Vaccine Policy)

nOPV2 terminology

In Table 1 and the related discussion, the reference to nOPV2 “reversion” in inaccessible areas could benefit from clarification. It would be useful to distinguish between the following:

- Genetic reversion to neurovirulence (a relatively rare molecular event), and
- Vaccine-derived transmission linked to low population immunity.

Using precise terminology here will help avoid confusion, particularly given the policy implications for global immunization strategies.

Data validation

Since the analysis includes data up to 15 November 2025, please confirm that the reported case counts align with the final WHO/GPEI surveillance updates. If there are differences between confirmed cases and those still pending laboratory confirmation, noting this briefly as a limitation would improve clarity.

3. Discussion and Analytical Depth

Comparative perspective

The discussion could be further strengthened by briefly reflecting on the successful interruption of WPV1 transmission in Nigeria in 2020. A short comparison highlighting why strategies that proved effective in the African region have faced different challenges in the Eastern Mediterranean context would add valuable analytical depth.

Environmental surveillance

The section on environmental surveillance is very useful. You may consider expanding slightly on

differences in sensitivity between urban and rural sampling. Since many detections occur in large urban centres (e.g., Karachi and Peshawar), discussing how this urban concentration might influence conclusions about silent transmission in rural or nomadic populations would be helpful.

4. Minor Points

- Table 3: Please clarify the source of the estimate for “children affected annually” (2.1–3.4 million) so it is clear that this represents an annual estimate rather than a cumulative figure for the entire study period.
- Terminology and formatting: Ensure consistent spelling and geographic description for references to the Durand Line and the Chaman/Torkham corridors throughout the manuscript.

Overall, this is a strong and well-structured manuscript addressing a critical public health issue. Addressing the points above will further strengthen the clarity, transparency, and policy relevance of the paper.

Declarations

Potential competing interests: No potential competing interests to declare.