

Emergence of Zika Virus in Pakistan: Implications on Public Health and Vector Control

Alishba Fatima, Muhammad Hasnain Azeem, Talal Arshad
Department of Medicine, Dow University of Health Sciences, Karachi.

Zika virus (ZIKV) of the Flavivirus genus was initially reported in 1947 in Uganda's Zika Forest. It has since become a major global health issue. The virus is mainly spread by *Aedes* spp. mosquitoes, but it also passes through maternal-fetal (vertical) transmission, sexual transmission, and blood transfusions. Symptomatic ZIKV disease has clinical overlaps with dengue and chikungunya, such as low-grade fever, arthralgia, retro-orbital headache, conjunctivitis, rash, and headache. In the majority of cases, ZIKV produces mild, self-limited illness; however, in certain patients it can produce severe complications like Guillain-Barré syndrome (GBS).¹

In pregnant women, ZIKV is linked with congenital Zika syndrome (CZS), which results in severe birth defects like intracranial calcifications, ventriculomegaly, hydrocephalus, and neurodevelopmental impairment. Research indicates that as many as 90% of infected children have long-term cognitive and learning difficulties.² In 2023, the ZBC-Consortium indicated that babies born to mothers who were infected during pregnancy had a higher likelihood of being small for their gestational age, with about 1.5% having microcephaly at birth, but others had it later in infancy. Such observations highlight the importance of long-term developmental follow-up of infected children.³

Although ZIKV has mainly caused outbreaks in tropical and subtropical regions, its circulation in South Asia remains poorly understood. Climate change has expanded *Aedes* mosquito vectors into previously low-risk regions, including parts of Asia, Africa, Europe, and the Americas.⁴ Until recently, Pakistan had no confirmed clinical

cases of ZIKV.⁵ However, detection of ZIKV in Karachi by Aga Khan University marked the first evidence of its circulation in the country, highlighting the urgent need for surveillance and epidemiological research because of its association with congenital abnormalities and neurological complications.⁶

Pakistan has experienced recurrent dengue outbreaks for over a decade, while chikungunya has also been reported in Karachi. The co-circulation of DENV, CHIKV, and ZIKV complicates clinical diagnosis because they share the same *Aedes aegypti* vector, similar symptoms, and overlapping geographic distribution.⁷ Improved clinician awareness and laboratory capacity are therefore essential to distinguish these infections and prevent underreporting. As no licensed ZIKV vaccine is available, prevention relies on integrated vector control, including elimination of mosquito breeding sites, insecticide use, and public education, particularly for pregnant women and high-risk populations.⁸ Personal protection through insect repellents, protective clothing, window screens, and safe sexual practices should also be encouraged. Enhanced surveillance and antenatal counseling remain critical because of the risk of congenital Zika syndrome.

Management of ZIKV infection is supportive, including rest, hydration, and analgesics. Aspirin and other NSAIDs should be avoided until dengue has been excluded because of the risk of hemorrhage.⁸ Experimental therapies such as quercetin hydrate have shown antiviral activity against ZIKV in laboratory studies but require further evaluation.⁹ The World Health Organization recommends laboratory confirmation of suspected ZIKV cases to differentiate them from other flaviviral infections, particularly dengue.¹⁰ Strengthening diagnostic capacity and surveillance is therefore essential in Pakistan.

In conclusion, the detection of ZIKV in Karachi represents an important public health concern. With dengue and chikungunya already endemic, coordinated efforts focusing on vector control, surveillance, laboratory diagnosis, public

Corresponding Author:

Alishba Fatima
Department of Medicine
Dow University of Health Sciences, Karachi.
Email: falishba277@gmail.com

Received: 21 July 2024, **Accepted:** 24 June 2026

Published: 17 July 2026

Copyright © 2026 The Author(s). This is an Open Access article under the CC BY-NC 4.0 license.

awareness, and maternal health are needed to prevent future outbreaks and reduce adverse pregnancy outcomes.

Conflict of Interest: None declared.

References

1. Sharma V, Sharma M, Dhull D, Sharma Y, Kaushik S, Kaushik S. Zika virus: an emerging challenge to public health worldwide. *Can J Microbiol* 2020; 66(2):87-98.
2. Kumar M, Kumar S, Kumar R, Jha MK, Tiwari SN, Gupta P. Serious Concern of Congenital Zika Syndrome (CZS) in India: A Narrative Review. *J Pregnancy* 2024; 2024: 1758662.
3. Zika and Microcephaly Return in 2024 — Precision Vaccinations News. (Assessed on 12th June 2026) Available from URL: <https://www.precisionvaccinations.com/zika-and-microcephaly-return-2024-2024-05-03>
4. George AM, Ansumana R, de Souza DK, Niyas VKM, Zumla A, Bockarie MJ. Climate change and the rising incidence of vector-borne diseases globally. *Int J Infect Dis* 2024; 139: 143-5.
5. Wahid B, Ali A, Rafique S, Idrees M. Zika virus: Is Pakistan next? *Asian Pac J Trop Med* 2018; 11(7): 451-2.
6. Likely cause of 2021 mysterious illness: Researchers finally confirm Zika virus in Pakistan.. (Assessed on 12th June 2026) Available from URL: <https://www.thenews.com.pk/print/1204677-likely-cause-of-2021-mysterious-illness-researchers-finally-confirm-zika-virus-in-pakistan>
7. Imtiaz K, Farooqi J, Barr KL, Kanji A, Prakoso D, Azizullah Z, et al. Zika Virus looming epidemic in Pakistan: seroprevalence findings by plaque reduction neutralization test in the Sindh Region of Pakistan. *medRxiv* 2023. (Assessed on 12th June 2026) Available from URL: <https://www.medrxiv.org/content/10.1101/2023.04.27.23289241v1>
8. CDC. Treatment and Prevention of Zika Virus (Assessed on 12th June 2026) Available from URL: <https://www.cdc.gov/zika/hcp/clinical-care/index.html>
9. Saivish MV, Menezes G de L, da Silva RA, Fontoura MA, Shimizu JF, da Silva GCD, et al. Antiviral Activity of Quercetin Hydrate against Zika Virus. *Int J Mol Sci* 2023; 24(8): 7504.
10. World Health Organization. Zika virus. (Assessed on 12th June 2026) Available from URL: <https://www.who.int/news-room/fact-sheets/detail/zika-virus>