

The Emergence of Chikungunya Virus (CHIKV) in Pakistan: Mapping the 2016 Outbreak

To the Editor,

Recently in Pakistan, scores of patients hailing from the remote suburbs of Karachi city were admitted to the hospitals of the city exhibiting the symptoms of dengue. Since dengue viral hemorrhagic fever is common in this region, it was suggested as a likely cause in the first place. However, it was later confirmed as negative. The unknown disease caused widespread panic among the people of the nearby areas and was constantly reported in the media. It was later confirmed by the health authorities as a chikungunya virus (CHIKV) outbreak.

Chikungunya, a mosquito-borne viral infection, and a self-limiting febrile viral disease that is characterized by the symptoms of arthralgia or arthritis. It emerged in Karachi city, a metropolitan city of Pakistan, infecting individuals in the suburbs of Malir, Saudabad, Pipri, Gadap, Bin Qasim, and Shah Faisal Colony. Later, the infection spread to other districts of the city including Korangi, Lyari, and Orangi town. The virus was later diagnosed in a female patient living in the federal capital Islamabad, thus confirming the spread of the infection from Karachi. The World Health Organization (WHO) affirmed that the CHIKV virus has become an epidemic in the country. As many as 30,000 patients were reported to be affected by the disease in Karachi city alone. The purpose of this letter is to highlight this issue and report the progress that has been made to address the outbreak in Pakistan.

CHIKV virus is a member of the Alphavirus genus in the family Togaviridae. It belongs to the same family of Zika and dengue viruses. It is the least harmful among the three viruses and is transmitted by the same mosquito that transmits the dengue virus.^[1] The infection remains asymptomatic initially. However, symptoms of the disease are polyarthralgia and fever (temperature typically $>38.9^{\circ}\text{C}$) that can be biphasic in nature and may last up to 2 weeks. The joint pain is generally symmetrical and mostly occurs in the ankles, elbows, fingers, wrists, and knees. Additionally, regular signs of CHIKV include rash, muscle pain, nausea, fatigue, and headache. Though the disease itself does not cause mortality, it can contribute to mortality in frail geriatric and pediatric patients.^[2,3]

CHIKV is common in areas in which the dengue virus is prevalent and its clinical symptoms are similar to those of dengue fever. It is assumed that numerous cases of dengue are misjudged and the occurrence of CHIKV disease is much higher than what has been reported.^[4] A blood test can help in detecting and diagnosing the viral infection. There is neither any antiviral treatment specific to CHIKV nor any vaccine available, and the treatment is only focused on providing symptomatic relief and supportive care. It is commonly treated with ibuprofen and paracetamol, however, experts recommend caution when administering NSAIDs as it can reduce platelet counts in chikungunya-infected patients.^[5,6]

Initially, a controversy erupted, causing panic among the citizens as the Health Department of Sindh Government and WHO could not confirm the origin of the unknown disease. Later, the health authority of the country officially reported the occurrence of the viral infection to WHO after a week following the confirmation of three CHIK cases in Karachi and one in Islamabad.^[7] The outbreak of the viral disease was first reported on the 18th of December 2016 in the Malir district of Karachi city. The news created a panic among the residents, and the health authorities sprang into action and investigations began. The disease infected around 70 healthcare personnel including 17 doctors, 31 paramedics, and 8 sanitary workers.^[8] More than 3000 patients landed in the emergency department (ER) of hospitals in the city with the symptoms of CHIK in a day and around 30,000 patients were affected by the disease during the first month of the outbreak.

The emergency was declared by the provincial government in the hospitals of Malir district and a help desk was formed for facilitating the patients. Since its emergence in December 2016, new cases have been reported from the previously uninfected areas of the city namely Korangi and Lyari districts. Out of the 30,000 suspected cases, a total of 638 cases of CHIK have been officially confirmed by the authorities, with 41 cases from Lyari, 532 cases from Saudabad, and 64 cases from Orangi town suburbs of the city. The prevalence of CHIK among the affected patients is 1.07% (0.99–1.16% for 95% confidence interval) with a relative risk of 0.042 (0.0060–0.3022 for 95% confidence interval). Figure 1 summarizes the CHIK outbreak in Pakistan.

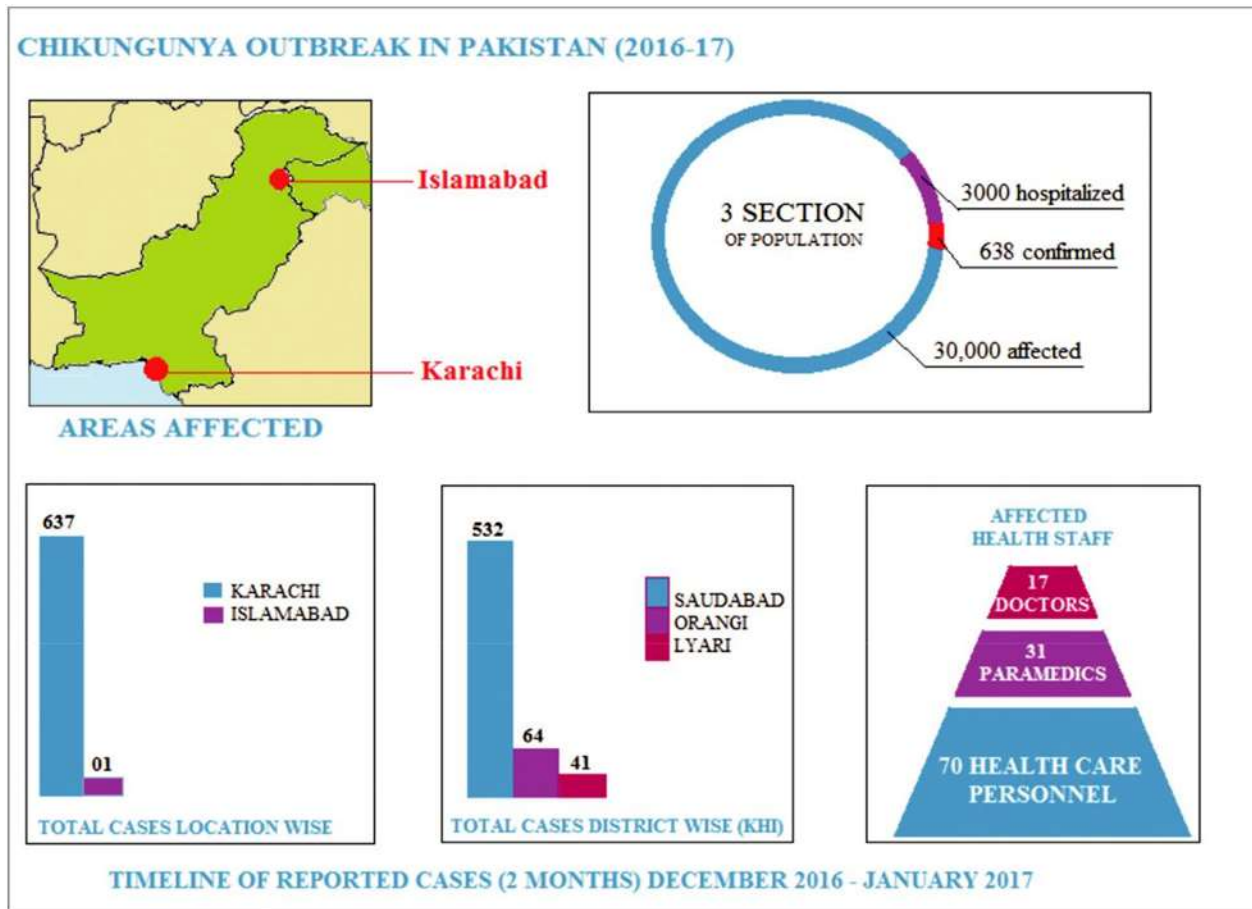


Figure 1: Chikungunya outbreak in Pakistan.

Currently, WHO and provincial and national health authorities are coordinating together on this front. The Health Department of Sindh plans to begin awareness and fumigation campaigns in the city to increase the patient's knowledge about CHIK and eradicate the mosquito "Aedes aegypti", which is the carrier of CHIK virus, respectively. In addition, directives have been issued to treat CHIK-affected patients as a priority. The authorities also plan to initiate a vector control strategy in the city to curb the spread of the diseases with the help of field experts and entomologists.^[9] It is worth mentioning that India has experienced the worst outbreak of CHIK in its history with as many as 14,656 documented cases.^[10] Further investigations are currently underway in tracing the likelihood of CHIK spread from India.

Pakistan is a country that is prone to the emergence of infections due to its hot and humid climate.^[11] Evidence indicates that CHIKV infections are also linked with the environmental condition along with poor waste management practices and sanitary conditions. The region of South Asia experiences hot and humid climate with long monsoon season, which creates an ideal habitat for mosquitoes to thrive and breed. These factors coupled with inadequate sanitary conditions, waterlogging, and inappropriate waste management have the potential to contribute to the outbreaks in this region.^[6] Similar to the awareness measures taken against the Ebola viral disease previously, the government

together with various stakeholders should create awareness about the disease and its transmission.^[12] It should focus on the improvement of the waste management and sanitary condition of the localities as well as working with field epidemiologists, experts, and entomologists to design vector control strategies to prevent any untoward situation in the future.

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Conflicts of interest

There are no conflicts of interest.

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APPENDIX A

SUPPORTING INFORMATION

- (1) The epidemiological data reported in this commentary are based on the recently available information. The timeline of the data is 2 months (December 2016–January 2017). The prevalence rate has been calculated using Medcalc®.^[13] The situation is currently developing. The data, prevalence, and figures reported in the letter are based on the current information available at the time of this writing and may not be exhaustive.

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