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Letter to the Editor

Transmission dynamics and response strategies for the chikungunya outbreak in Southern China

Since early 2025, the mosquito-borne chikungunya virus (CHIKV) has become a global concern, with cases reported across Asia, Africa, Europe, and the Americas [1]. Beginning in early July, an unprecedented outbreak has emerged in Guangdong [2], a southern Chinese province known as an international trade hub. Contributing factors included excessive rainfall and the region's subtropical climate, which created favorable conditions for mosquito proliferation. By August 16, nearly 10,000 cases had been documented, and the majority of cases were identified in Foshan, a major industrial city of Guangdong province (Fig. 1A). CHIKV had spread to almost all cities in Guangdong Province within a month, particularly with a sharp increase in cases in the capital city, Guangzhou (Fig. 1A). Within just ten days of the first imported case, the virus reached the neighboring region of Macau on July 18, followed by Taiwan on July 30 and Hong Kong on August 2. In response, public health authorities implemented a series of measures, including isolating cases, standardized treatment, and targeted mosquito eradication in public areas (Fig. 1B).

Based on the epidemiological dataset from the Guangdong Provincial Center for Disease Control and Prevention (CDC), which records daily reported cases [2], we estimated the basic reproduction number (R_0) in a real-world setting using three different methodologies. The R_0 value was estimated at 1.98 using the exponential growth model, 1.96 based on time-dependent probability distribution [3], and 2.11 using Bayesian MCMC-based estimation based on the records in the first month. During the second and third week, approximately 300–400 cases were reported daily [2]. Following the activation of a Level III response to public health emergency on July 29 by top officials in Foshan [2], the number of daily reported cases has shown a consistent decline. The effective reproduction number (R_0) has decreased to 0.46 in the recent week. If the current control measures are maintained, the outbreak is expected to be contained soon. However, it is critically important to avoid implementing excessively intrusive measures that could spark public concerns and complaints, recalling experiences from the COVID-19 response in China.

Finally, the emergence and response to this chikungunya outbreak in southern China should serve as a wake-up call. Alarmingly, over the past week, new cases in Guangzhou have surged dramatically. Given that Guangzhou is a mega-city with a population exceeding 30 million, increased domestic and international population mobility poses a substantial risk of it becoming the next epicenter. Coupled with global climate change and the widespread presence of mosquito vectors, the threats posed by CHIKV and other arboviruses are likely to continue growing [4,5], making these infectious diseases endemic in an increasing number of countries and regions. Now is the time to strengthen preparedness and response.

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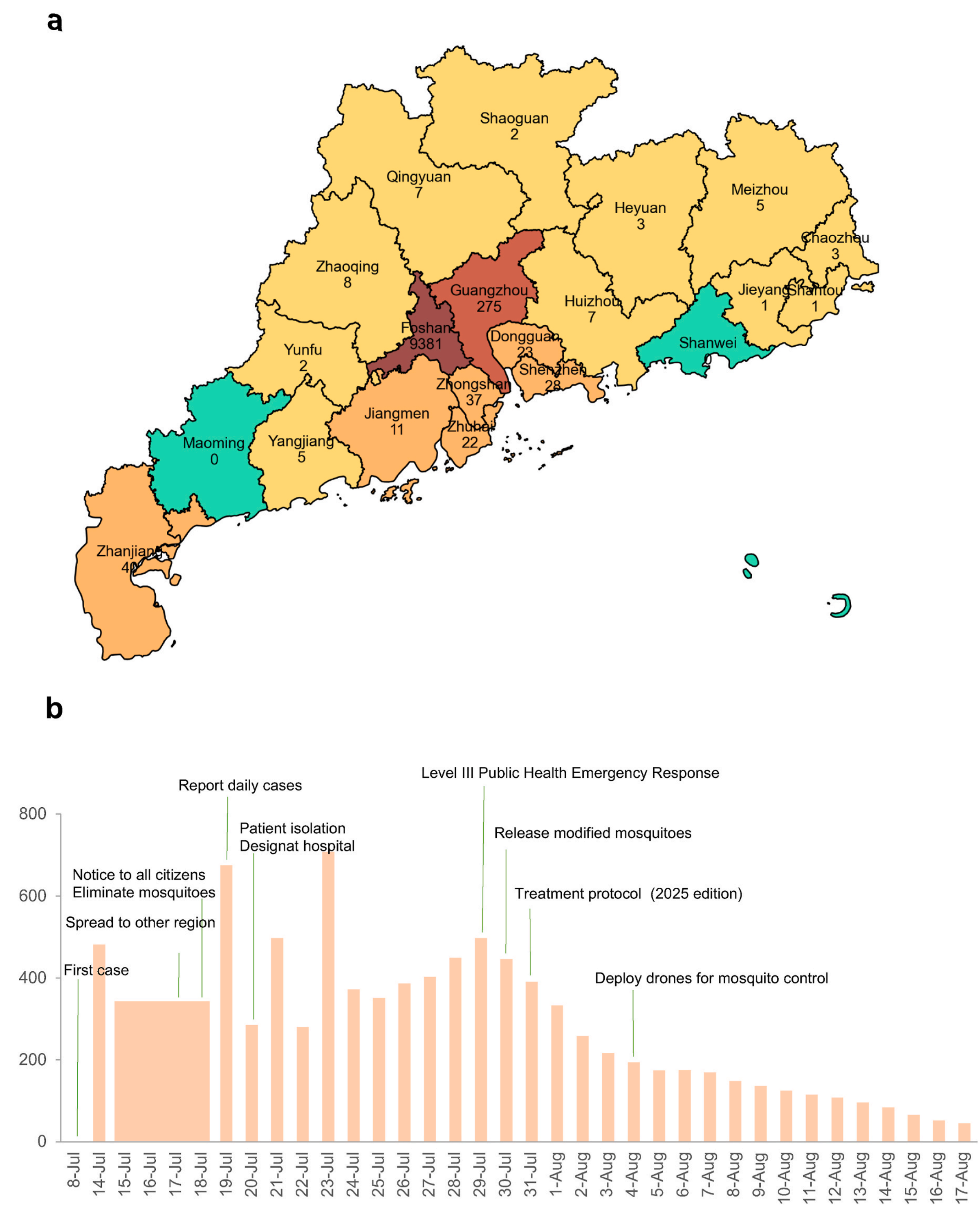

Fig. 1. Epidemiological features of the chikungunya outbreak in Southern China. (A) Geographic distribution of reported cases in each city of Guangdong Province as of August 16, 2025. (B) Daily reported case counts and the timeline of key events and public health responses in Foshan City. Of note, a total of 710 cumulative cases were reported from July 15 to July 18, as data from these days were combined. Data were obtained from the Guangdong CDC (https://cdcp.gd.gov.cn/ywdt/zdzt/yfjkkyr/, accessed August 18, 2025).

CRediT authorship contribution statement

Qinyue Zheng: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Visualization, Writing – original draft. **Jaffar A. Al-Tawfiq:** Investigation, Validation, Writing – review & editing. **Qiuwei Pan:** Conceptualization, Investigation, Validation, Writing – original draft.

Declaration of competing interest

The authors declare no conflict of interest.

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