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Research Article

Prevalence of Chikungunya in Hyderabad Metropolitan area from 2015-2018

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ABSTRACT

Chikungunya, a viral disease transmitted by Aedes mosquitoes, has become a significant public health issue in the Hyderabad metropolitan area, particularly from 2015 to 2018. This study analyzes the prevalence and incidence of chikungunya using retrospective data from Fever Hospital and the Institute of Preventive Medicine (IPM). The analysis reveals that Fever Hospital recorded the highest admissions in 2016, with a total of 44 cases, followed by a decline in subsequent years. Notably, no fatalities were reported during this period, indicating a non-fatal trend. The IPM data showed variable positivity rates, peaking at 100% in 2016 from a limited number of tests, while the overall trend indicated an increase in both testing and confirmed cases by 2018. This research highlights the epidemiological patterns of chikungunya in Hyderabad, emphasizing the need for enhanced surveillance and targeted public health interventions to mitigate the disease's impact. The findings underscore the importance of ongoing monitoring to inform strategies aimed at controlling chikungunya outbreaks and reducing morbidity associated with this viral infection.

1. Introduction

Chikungunya, a viral disease transmitted primarily by Aedes mosquitoes, has emerged as a significant public health concern in tropical and subtropical regions, including India. The disease is characterized by high fever, severe joint pain, rash, and malaise, and while mortality rates are low, its impact on morbidity is substantial, often leading to chronic pain and long-term disability in affected individuals *(Pialoux et al., 2007; Burt et al., 2012*). Since its re-emergence in the Indian subcontinent in 2006, chikungunya has presented significant challenges for public health systems due to its high transmissibility and the lack of specific antiviral treatments or vaccines (*Sudeep & Parashar, 2008; Kumar et al., 2011*).

In Hyderabad, Telangana, healthcare facilities such as Fever Hospital and the Institute of Preventive Medicine play critical roles in monitoring and managing chikungunya cases. The Fever Hospital serves as a primary healthcare center for infectious diseases, providing treatment and tracking admissions of vector-borne diseases, including chikungunya. The Institute of Preventive Medicine complements these efforts by conducting diagnostic testing and surveillance, thereby contributing to understanding the prevalence and epidemiological patterns of chikungunya in the region.

This study aims to analyze chikungunya prevalence in Hyderabad through data collected from the Fever Hospital and the Institute of Preventive Medicine over a period from 2015 to 2018. By examining trends in hospital admissions and laboratory-confirmed cases, this research seeks to provide a comprehensive overview of chikungunya's epidemiology in Telangana. The findings may offer valuable insights into the seasonal and temporal patterns of chikungunya, helping public health authorities devise better-targeted interventions for controlling outbreaks and reducing disease burden.

2. Material and Methods

To investigate the prevalence and incidence of chikungunya in the Hyderabad metropolitan area in Telangana, we conducted a retrospective analysis using data obtained from two primary healthcare facilities in Hyderabad: Fever Hospital and the Institute of Preventive Medicine (IPM). Chikungunya data were collected from archived medical records covering a four-year period from January 2015 to December 2018. Fever Hospital provided records on patient admissions related to chikungunya, which included demographic information, admission dates, and clinical outcomes. Concurrently, IPM contributed data on laboratory confirmed cases, detailing the total number of individuals tested and those testing positive for chikungunya.

Data extraction from both institutions adhered to ethical guidelines, with all patient records anonymized to protect confidentiality. Only records of confirmed chikungunya cases were included in the study, with the data organized by year to facilitate temporal analysis. The criteria for inclusion required complete records with relevant clinical and laboratory data from 2015 to 2018.

For data analysis, we calculated the annual prevalence and incidence rates of chikungunya in the Hyderabad metropolitan area in Telangana region. Prevalence was measured by dividing the number of confirmed cases each year by the estimated population at risk, based on regional census data.

3. Results and Discussion

The epidemiological data on Chikungunya cases from Fever Hospital (Figure-1) and the Institute of Preventive Medicine (IPM), Hyderabad, Telangana (Figure-2), for the years 2015–2018, reveal notable trends. At Fever Hospital, the number of Chikungunya admissions was highest in 2016, with 44 cases, followed by a slight decrease to 42 in 2017 and a further decline to 26 in 2018. Importantly, no fatalities were recorded across all four years, indicating a non-fatal trend at this institution.

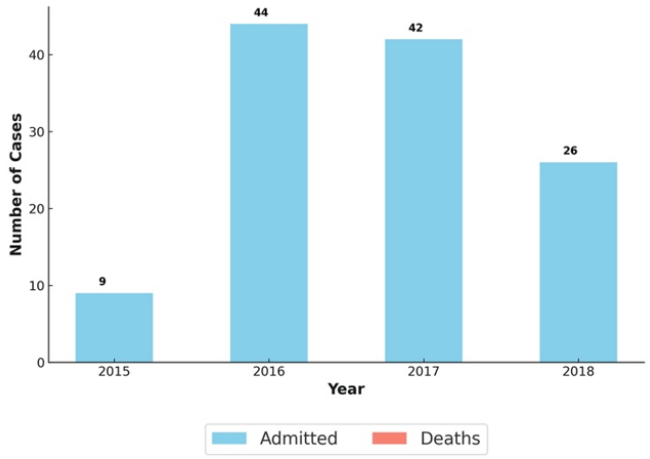

Figure-1. Prevalence of Chikungunya Admissions and Deaths in Fever Hospital, Hyderabad

Testing data from IPM showed varying positivity rates over the same period. In 2015, of the 17 individuals tested, 7 were positive (41%). The positivity rate peaked in 2016 with a 100% positivity rate, albeit from only two tests conducted. In 2017, the positivity rate was 32.5% (13 positives from 40 tested), while in 2018, a higher testing volume (61 tested) revealed a 50% positivity rate, with 31 positive cases. The data indicate an increase in testing and positive cases over time, particularly in 2018, reflecting ongoing Chikungunya transmission and possibly heightened awareness or diagnostic capacity in the region.

The observed trends in Chikungunya cases at Fever Hospital and the Institute of Preventive Medicine (IPM), Hyderabad, between 2015 and 2018, provide insights into Chikungunya's epidemiology and testing practices in Telangana. The steady presence of Chikungunya cases and the absence of fatalities at Fever Hospital across all four years (2015-2018) suggest that while Chikungunya infection rates may fluctuate, the disease largely presents as non-fatal in this region, which aligns with broader epidemiological findings indicating that Chikungunya typically has low mortality rates but high morbidity (*Thiberville et al 2013).*

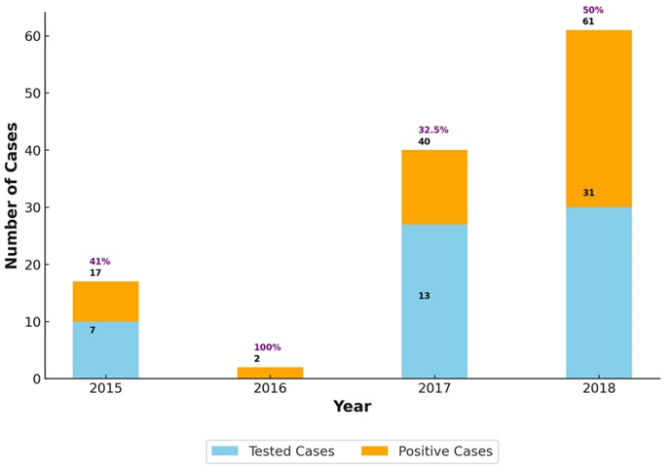

Figure-2. Prevalence of Chikungunya cases at Institute of Preventive Medicine, Hyderabad (2015-2018)

The admission peak in 2016 at Fever Hospital might reflect an outbreak phase or increased clinical recognition of Chikungunya due to enhanced awareness following national outbreaks in previous years. Although the admission rate decreased in subsequent years, the overall data indicate sustained transmission within the community. Studies from other endemic regions, such as those in Maharashtra and Kerala, have also reported fluctuating but sustained transmission of Chikungunya, likely influenced by vector abundance and environmental factors. *(V Ravi 2006).*

At IPM, the increase in the number of Chikungunya tests from 2015 to 2018 suggests a growing emphasis on active surveillance and diagnostic efforts. The high positivity rate in 2016 (100%) may be attributed to targeted testing during an outbreak period when clinical suspicion was high, despite the low testing volume. By 2018, the increased testing volume and positivity rate (50%) likely reflect a response to heightened awareness and a larger demand for confirmatory diagnosis. This finding resonates with studies that highlight the importance of robust testing capacity in tracking and managing Chikungunya outbreaks.

The fluctuating positivity rates in IPM's data underscore the complex epidemiological pattern of Chikungunya, which often correlates with vector seasonality and population immunity levels The spike in positive cases in 2018 may also be linked to cyclical outbreaks, as reported in similar tropical regions. Given that Chikungunya is primarily spread by Aedes mosquitoes, transmission dynamics may shift with vector population trends, which are in turn influenced by seasonal and environmental conditions.

These findings underscore the need for continuous surveillance and public health preparedness to manage Chikungunya outbreaks effectively. Vector control, coupled with timely diagnostics and public awareness campaigns, remains essential in minimizing the impact of future Chikungunya outbreaks in Telangana. Enhanced reporting and surveillance, particularly at sentinel sites like IPM and Fever Hospital, can further aid in understanding the patterns and prevalence of Chikungunya, enabling more targeted public health interventions.

4. Conclusion:

The study underscores the fluctuating prevalence of chikungunya in the Hyderabad metropolitan area from 2015 to

2018, demonstrating significant variations in hospital admissions and laboratory-confirmed cases. The highest incidence was noted in 2016, with a gradual decline in subsequent years, yet the persistence of positive cases suggests ongoing transmission. Importantly, the absence of fatalities points to the need for continued public health vigilance and intervention strategies. Enhanced diagnostic and surveillance efforts, coupled with community awareness programs, are essential to effectively manage chikungunya outbreaks and minimize their impact on public health in the region. Future research should focus on identifying environmental and socio-economic factors influencing transmission dynamics to develop comprehensive control measures.

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Competing Interests

The authors have declared that no competing interests exist.

References

[1] Pialoux, G., Gaüzère, B. A., Jauréguiberry, S., & Strobel, M. (2007). Chikungunya, an epidemic arbovirosis. *The Lancet Infectious Diseases*, 7(5), 319-327.

[2] Burt, F. J., Rolph, M. S., Rulli, N. E., Mahalingam, S., & Heise, M. T. (2012). Chikungunya: A re-emerging virus. *The Lancet*, 379(9816), 662-671.

[3] Sudeep, A. B., & Parashar, D. (2008). Chikungunya: An overview. *Journal of Biosciences*, 33(4), 443-449.

[4] Kumar, N. P., Joseph, R., Kamaraj, T., & Jambulingam, P. (2011). A study on chikungunya outbreak during 2007 in Kerala, south India. *Indian Journal of Medical Research*, 129(3), 311-315.

[5] Thiberville SD, Moyen N, Dupuis-Maguiraga L, Nougairede A, Gould EA, Roques P, de Lamballerie X. Chikungunya fever: epidemiology, clinical syndrome, pathogenesis and therapy. Antiviral Res. 2013 Sep;99(3):345-70.

[6] V Ravi, RE-EMERGENCE OF CHIKUNGUNYA VIRUS IN INDIA, Indian Journal of Medical Microbiology,Volume 24, Issue 2,2006,Pages 83-84,

[7] Anish Ts, Vijayakumar K, Leela IA. Domestic and Environmental Factors of Chikungunya-affected Families in Thiruvananthapuram (Rural) District of Kerala, India. J Glob Infect Dis. 2011 Jan;3(1):32-6.

[8] Gupta, V., et al. (2019). *Public health approaches to control Chikungunya outbreaks: Lessons from India*. *Indian Journal of Public Health*, 63(3), 234-239.