4. Natarajan, A., Jacob, J., Palaniappan, S., [et al.]. A systematic review and meta-analysis of long COVID symptoms / A. Natarajan [et al.] // Systematic Reviews. – 2023. – Vol. 12. – Art. 88.

5. Akbarialiabad, H., Taghrir, M. H., Abdollahi, A., [et al.]. Long COVID: a comprehensive systematic scoping review / H. Akbarialiabad [et al.] // Journal of Translational Medicine / BMC / PMC. – 2021.

6. Google Form [Electronic resource in the bibliography]. – URL: https://docs.google.com/spreadsheets/d/1freBb4Rny8DWJFLGVrBzrBUMiTORqWzi6dupwP4MaAA/edit?resourcekey=&gid=1088973406#gid=1088973406 (date of access: 06.11.2025).

УДК 616.928.8:578.833.2-036.22-08(548.7)

K. D. K. P. R. Perera, T. H. Hathagoda

Scientific Supervisor: PhD, Associate Professor, S. K. Pashkevich

Educational institution
"Gomel State Medical University"
Gomel, Republic of Belarus

EPIDEMIOLOGICAL TRENDS AND STRATEGIC RESPONSES TO DENGUE, A NOTIFIABLE DISEASE IN SRI LANKA

Introduction

Dengue fever is an arthropod-borne viral infection, caused by any 4 serotypes (DENV-1 to DENV-4) of single stranded RNA virus from genus flavivirus. It is common in subtropical and tropical areas of the world and transmitted to humans by Aedes mosquitoes, mainly by female vectors including Aedes albopictus aegypti and A aegypti. In infected humans, virus circulates in the blood for 2 to 7 days. During this period, Aedes mosquito receive the virus when fed on humans [1]. In past few decades, the incidence of dengue fever has increased rapidly leading to an endemic in Asia, America, Australia and Africa. 75% of infected individuals are asymptomatic and other individuals range from having dengue fever to severe dengue hemorrhagic fever and shock. Incubation period is usually 4 to 7 days and lasting for 3 to 10 days with symptoms. Viremia (presence of virus in bloodstream) happens 24 to 48 hours before the onset of symptoms [2]. Dengue fever has 3 phases as febrile, critical and recovery stage. In febrile stage individuals experience high grade fever typically reaching 40 degrees, lasting from 2 to 7 days. Other symptoms include skin erythema, myalgia, arthralgia, sore throat, nausea and vomiting. During the critical phase temperature drops to 37.5 degrees to 38.5 degrees between 3 to 7 days. Before the critical phase, platelet count rapidly decrease, accompanied by increased levels of hemotocrit. If Leukopenia occurs 24 hours before the drop in platelet count, it's an emergency condition and left untreated in critical phase can lead to shock, disseminated intravascular coagulation, organ dysfunction or hemorrhage. The recovery phase causes the reabsorption of extravascular fluid in 2 to 3 days [1]. Diagnostic studies include culture, acute and convalescent serological testing, dengue antigen detection of non-structural protein 1 and PCR. Symptomatic treatment is carried out for dengue fever. Drugs like acetaminophen is used but NSAIDs (nonsteroidal anti-inflammatory drugs) like aspirin must be avoided due to risk of bleeding [2]. Dengue fever has annually over 100 million cases and 20 to 25,000 deaths leading to global epidemics in different regions, posing public health emergency [1]. In Sri Lanka, dengue currently has reached epidemic proportions, by reporting 23,000 cases nationwide as of 2025 and facing a public health crisis due to surge in dengue cases. The Ministry of Health of Sri Lanka is actively holding awareness programmes and campaigns to clean-up the places to avoid mosquito breeding sites [3].

Goal

This research aims to analyze Sri Lanka's dengue trends from 2013 to 2023 to identify outbreak drivers and inform targeted, data-driven strategies for future prevention and control.

Material and methods of research

Data was gathered from research studies in Sri Lanka and WHO that report cases of dengue in Sri Lanka and the impacts over the years.

The results of the research and their discussion

Considering sri lanka's dengue annual case count for the past dacade it has been fluctuating yet persistently high, which stems from the interplay of the climate changes,viral sterotype shifts, urbanization and public health interventions. Beginning in 2013, the country reported approximately 32,063 cases, followed by a modest increase to 35,095 in 2014 and 34,188 in 2015, indicating a sustained endemic equilibrium. However, 2016 marked the beginning of a pronounced growth, with 55,150 cases reported, likely influenced by the reemergence of DENV-2 after a prolonged absence, which led to escalated propotions in 2017[4]. That year, Sri Lanka recorded a staggering 186,101 suspected dengue cases – the highest in its history – with a case fatality rate of 0.24%, underscoring the severity of the outbreak and the strain on healthcare infrastructure. surge was attributed to a combination of factors: the dominance of DENV-2, increased rainfall during the southwest monsoon, and inadequate vector control measures in densely populated urban centers such as Colombo, Gampaha, and Kalutara. In response, the Sri Lanka Red Cross Society (SLRCS) launched the MDRLK007 DREF operation, which helped mitigate further escalation [6]. The following year, 2018, saw a marked reduction to 51,659 cases, suggesting the effectiveness of emergency interventions and possibly increased population immunity to the prevailing serotype. Yet, this reprieve was short-lived. In 2019, dengue cases more than doubled to 105,049, coinciding with the resurgence of DENV-3 and a shift in serotype dominance, particularly in districts like Jaffna and Colombo [5]. The onset of the COVID-19 pandemic in 2020 and 2021 introduced a new dynamic: while public health systems were overwhelmed, mobility restrictions and heightened hygiene practices contributed to a relative suppression of dengue transmission, with 2020 recording 31,162 cases and 2021 slightly higher at 35,924[5]. However, as pandemic-related controls eased, dengue rebounded in 2022 with 76,689 cases, and by 2023, the number climbed to 89,799, affirming endemicity and the need for continued vigilance. The WHO Situation Report from May 2023 revealed that by mid-May alone, 31,450 cases had already been reported, compared to 18,614 during the same period in 2022—a 69% increase—suggesting a potentially severe outbreak year. Weekly case counts in April and May 2023 hovered around 1,900, with a 3% week-on-week increase observed between weeks 17 and 18. These districts, characterized by high population density, poor waste management, and frequent water stagnation, have consistently reported elevated transmission rates, particularly during the southwest monsoon (May–September) and northeast monsoon (October–January). The cyclical nature of dengue outbreaks in Sri Lanka is further illustrated by seasonal peaks in weeks 16–18 and 38–40, as shown in the WHO's weekly distribution graphs. Monthly data from 2021 to 2023 also confirms this pattern, with case surges typically beginning in May and peaking in July, then tapering off before rising again in October. he demographic distribution of dengue deaths adds another layer of complexity: in both 2022 and 2023, the 25–49 age group accounted for the highest proportion of fatalities—50.75% and 45.45%, respectively—highlighting the disease's impact on economically productive populations [5]. Children aged 5–14 also faced significant morbidity, with schools identified as key transmission sites, leading to educational disruptions and psychosocial stress [5]. In response, the IFRC's SEAP outlined a multi-pronged strategy, including school-based clean-up campaigns, community surveillance, and hospital surge support. The protocol's early action triggers – such as weekly caseloads exceeding 1,500 or district-level spikes 1.5 times above average – were designed to preempt outbreaks before they reached epidemic levels. Notably, the early launch of the 2023 operation helped prevent a repeat of the 2017 crisis, demonstrating the value of anticipatory action. Over the decade, serotype dynamics have played a pivotal role in shaping outbreak severity. DENV-1, once dominated by genotype III, was replaced by genotype I around 2009 and remained prevalent in Colombo through 2019[4]. DENV-2's reemergence in 2016 triggered the 2017 outbreak, while DENV-3's resurgence in 2019 contributed to that year's spike. DENV-4, though less common, continues to circulate at low levels. The WHO's technical support between 2022 and 2023 included SOP development for death investigations, hospital readiness assessments, and entomological reviews, all aimed at strengthening clinical and preventive capacities [5]. Meanwhile, the SLRCS's community engagement efforts – ranging from door-to-door awareness to volunteer hospital deployments – have complemented national strategies. Despite these efforts, challenges persist: inconsistent implementation, limited resources, and insufficient community participation continue to hinder optimal outcomes. The decade-long data underscores the need for integrated, data-driven approaches that combine epidemiological surveillance, environmental management, and public education. As Sri Lanka moves progresses the lessons of the past decade, particularly the importance of early action, serotype monitoring, and localized interventions – must inform future strategies to reduce dengue's burden and protect vulnerable populations [4].

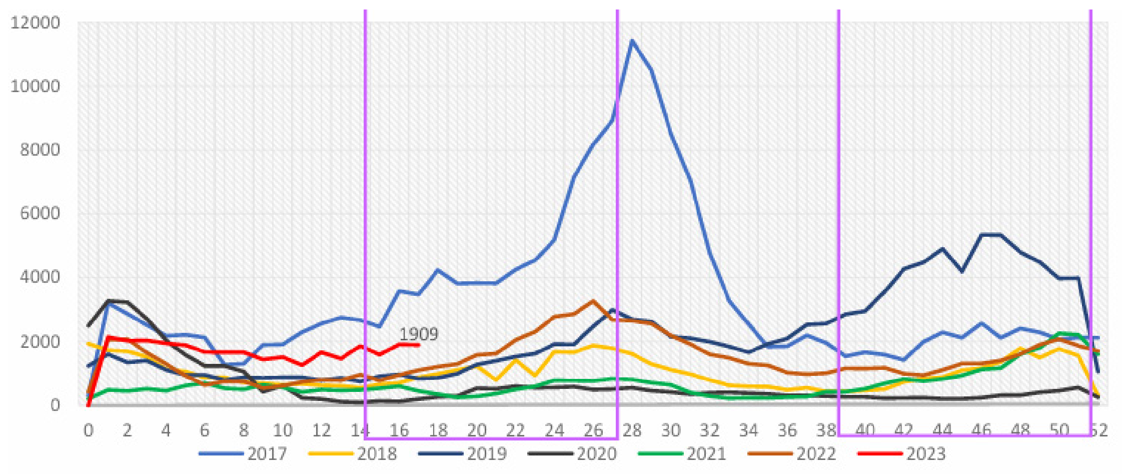

Figure 1 – Weekly seasonality pattern of Dengue 2017 to 2023

Conclusion

Between 2013 and 2023, Sri Lanka experienced significant fluctuations in dengue incidence, shaped by serotype dynamics, climatic variability, and public health responses. The highest burden was recorded in 2017, with 186,101 suspected cases, largely driven by the re-emergence of DENV-2 and exacerbated by monsoonal rains and urban transmission. In contrast, the lowest annual caseload occurred in 2013, with 32,063 cases, reflecting a relatively stable endemic baseline prior to major serotype shifts. These trends underscore the importance of sustained surveillance, early action protocols, and adaptive vector control strategies to mitigate future outbreaks and protect at-risk populations

LITERATURE

1. Schaefer, T. J., Prasan, K., Panda, R. W. Dengue Fever [Electronic resource in the bibliography] / T. J. Schaefer, K. Prasan, R. W. Panda // StatPearls – NCBI Bookshelf. – National Library of Medicine, National Center for Biotechnology Information. – Обновлено: 6 марта 2024. – Access mode: https://www.ncbi.nlm.nih.gov/books/NBK537303/ (date of access: 03.10.2025).

2. Carmona, S., Muzny, C. A. Dengue [Electronic resource in the bibliography] / S. Carmona, C. A. Muzny // MSD Manual Professional Edition. – Проверено: август 2025. – Access mode: https://www.msdmanuals.com/professional/infectious-diseases/arboviral-fevers/dengue (date of access: 05.10.2025).

3. Hussein, Z. Sri Lanka gripped by Dengue [Electronic resource in the bibliography] / Z. Hussein // Daily Mirror. – Обновлено: 12 июня 2025. – Access mode: https://www.dailymirror.lk/news-features/Sri-Lanka-gripped-by-Dengue-Chikungunya-outbreaks/ (date of access: 02.10.2025).

4. World Health Organization, Sri Lanka. Dengue Situation Update 01 [Electronic resource in the bibliography]. – 12 мая 2023. – Access mode: https://www.who.int/docs/default-source/sri-lanka-documents/dengue-sit-rep-1-12.05.2023-v2.pdf (date of access: 04.10.2025).

5. Simplified early action protocol: Sri Lanka, Dengue [Electronic resource in the bibliography]. – Access mode: https://www.preventionweb.net/files/78543_seapsrilankadengue.pdf (date of access: 06.10.2025).

6. Xinhua. Sri Lanka reports over 38,000 dengue cases in 2024 [Electronic resource in the bibliography]. – Обновлено: 18 сентября 2024. – Access mode: https://english.news.cn/asiapacific/20240918/Sri-Lanka-reports-over-38000-dengue-cases-in-2024-Xinhua (date of access: 04.10.2025).

УДК 578.821.51:616.914-036.2(540)

Revooru Sowmya

Scientific supervisor: Ph.D., Associate Professor T. A. Petrovskaya

Educational institution
"Gomel State Medical University"
Gomel, Republic of Belarus

PREVALENCE OF VARICELLA IN INDIA

Introduction

Varicella, commonly known as chickenpox, is an acute, highly contagious disease caused by the Varicella-Zoster Virus (VZV), which belongs to the Herpesviridae family. The infection spreads mainly through airborne respiratory droplets and direct contact with vesicular fluid. Clinically, it is characterized by fever, malaise, and a distinctive vesicular rash appearing in successive crops. Although the disease is usually mild in children, it can lead to serious complications such as pneumonia, encephalitis, and secondary bacterial infections, particularly in adults, pregnant women, and immunocompromised individuals [1].

In India, varicella remains an endemic infection and continues to be a significant public health issue. The epidemiological pattern of varicella in tropical countries such as India differs considerably from that observed in temperate regions. In temperate climates, the majority of infections occur during early childhood, resulting in widespread immunity by adolescence. However, several studies from India have demonstrated a delayed age of primary infection, leaving a considerable number of adolescents and adults susceptible to the disease [2]. This shift in infection age is of concern, as varicella tends to be more severe in adults, often leading to higher rates of complications and hospitalization.

Serological studies conducted across various parts of India have revealed a gradual rise in VZV immunity with age. According to Lokeshwar et al. (2000) [2], the prevalence of varicella antibodies increased from about 29% among children aged 1–5 years to over 90% among adults aged 31–40 years. Subsequent research has confirmed similar patterns, showing that between 20–50% of children under 10 years remain susceptible to infection, compared to 80–90% immunity among adults [3]. These findings highlight the continuous circulation of the virus in Indian communities and the risk of outbreaks in groups with low immunity levels [1].

The seasonal pattern of varicella in India typically peaks during the late winter and early summer months (February to April). This increase coincides with climatic conditions