# Dengue: Global Health Threat and Communicative Imperatives

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***Abstract*** - This research consolidates diverse perspectives on dengue fever from global studies, focusing on its prevalence, risk factors, and the role of communication in its prevention and control. Dengue, a significant vector-borne disease, remains a public health challenge worldwide, displaying international variations in incidence while consistently escalating. Studies by Zeng and Zhan (2021), Wang and Nishiura (2021), and Nguyen-Tien et al. (2021) highlight its prevalence, outbreaks, and risk factors in diverse regions, including Japan, Vietnam, Pakistan, and Bhutan. Challenges in disease identification, limited vaccines, and complex clinical presentations pose critical obstacles in disease management (Ali, 2015; Essa et al., 2022).

The study emphasizes the need for effective health communication strategies in mitigating dengue's impact. Communication in health crises, explored by Gupta (2021), Corcoran (2013), and Bimolchandra Singh et al. (2019), underscores strategic communication's role in health promotion, community awareness, and altering health behaviors. Media channels, including radio, TV, and newspapers, serve as crucial tools for disseminating health information (Pandey, 2017; Kumar, 2023). Folk media's importance, particularly in rural areas, as studied by Singh (2022), amplifies the need for diverse communication strategies.

This research calls for a comprehensive approach to combat dengue, integrating healthcare, communication, and policy measures. Examples from Nepal and Bangladesh (Griffiths, 2013; Alam et al., 2021), show that effective response systems, community engagement, and increased health literacy are crucial. The study concludes that an evidence-based, holistic health communication strategy with community involvement is essential for addressing dengue globally.

***Keywords - Dengue, Health Communication, Disease Control, Global Health, Public Health***

## INTRODUCTION

Dengue is a kind of vector-borne emerging infectious disease that can be transmitted directly or indirectly between humans. It is the most prevalent viral infection transmitted by Aedes mosquitoes. According to WHO, more than 3.9 billion people in over 129 countries are at risk of contracting dengue with an estimated 40000 deaths every year. As per the Government data available, India is one of the most affected countries where the fatality rate caused by dengue is very high whereas amongst different states in India West Bengal and its capital Kolkata always ranked upside (chart given). According to a recent report from the National Centre for Vector-Borne Diseases Control, West Bengal experienced substantial fluctuations in dengue cases over recent years. After peaking at 37,746 cases in 2017, the incidence dropped sharply to 5,166 in 2020 but increased again in 2021 to 8,264. The situation worsened significantly in 2022, with cases skyrocketing to 67,272 and 30 reported deaths, highlighting a severe outbreak. Although cases decreased to 30,683 in 2023, they remained high compared to earlier years. Since dengue is preventable through effective protective measures and community involvement, this study highlights the necessity of reviewing existing literature to gain insights and enhance current strategies for managing the disease.

**National Center for Vector Borne Diseases Control**

**DENGUE/DHF SITUATION IN INDIA**

**Dengue Cases and Deaths in the Country since 2017**

| Sl. No. | Affected States/UTs | 2017 | | 2018 | | 2019 | | 2020 | | 2021 | | 2022 | | 2023 | | 2024 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | C | D | C | D | C | D | C | D | C | D | C | D | C | D | C | D |
| 1 | Andhra Pradesh | 4925 | 0 | 4011 | 0 | 5286 | 0 | 925 | 0 | 4760 | 0 | 6391 | 0 | 6453 | 0 | 1836 | 0 |
| 2 | Arunachal | 18 | 0 | 1 | 0 | 123 | 0 | 1 | 0 | 7 | 0 | 114 | 0 | 130 | 0 | 6 | 0 |
| 3 | Assam | 5024 | 1 | 166 | 0 | 196 | 0 | 33 | 0 | 103 | 0 | 1826 | 2 | 8208 | 7 | 270 | 0 |
| 4 | Bihar | 1854 | 0 | 2142 | 0 | 6712 | 0 | 493 | 2 | 633 | 2 | 13972 | 32 | 20224 | 74 | 7 | 0 |
| 5 | Chattisgarh | 444 | 0 | 2674 | 10 | 722 | 0 | 57 | 0 | 1086 | 0 | 2679 | 10 | 2412 | 0 | 160 | 0 |
| 6 | Goa | 235 | 0 | 335 | 1 | 992 | 0 | 376 | 0 | 649 | 0 | 443 | 1 | 512 | 3 | 177 | 0 |
| 7 | Gujarat | 4753 | 6 | 7579 | 5 | 18219 | 17 | 1564 | 2 | 10983 | 14 | 6682 | 7 | 7222 | 7 | 893 | 1 |
| 8 | Haryana | 4550 | 0 | 1898 | 0 | 1207 | 0 | 1377 | 0 | 11835 | 13 | 8996 | 18 | 8081 | 11 | 69 | 0 |
| 9 | Himachal | 452 | 0 | 4672 | 7 | 344 | 2 | 21 | 0 | 349 | 0 | 3326 | 1 | 1989 | 0 | 12 | 0 |
| 10 | J & K | 488 | 0 | 214 | 0 | 439 | 0 | 53 | 0 | 1709 | 4 | 8269 | 18 | 6403 | 10 | 4 | 0 |
| 11 | Jharkhand | 710 | 5 | 463 | 1 | 825 | 0 | 79 | 0 | 220 | 1 | 290 | 0 | 2578 | 4 | 76 | 0 |
| 12 | Karnataka | 17844 | 10 | 4427 | 4 | 16986 | 13 | 3823 | 0 | 7393 | 7 | 9889 | 9 | 19300 | 11 | 5976 | 5 |
| 13 | Kerala | 19994 | 37 | 4083 | 32 | 4652 | 16 | 4399 | 5 | 3251 | 27 | 4432 | 29 | 17426 | 153 | 8115 | 22 |
| 14 | Lakshadweep | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 67 | 0 | 445 | 0 | 384 | 0 |
| 15 | Madhya Pradesh | 2666 | 6 | 4506 | 5 | 4189 | 2 | 806 | 0 | 15592 | 11 | 3318 | 2 | 6979 | 0 | 742 | 0 |
| 16 | Meghalaya | 52 | 0 | 44 | 0 | 82 | 0 | 4 | 0 | 129 | 0 | 26 | 0 | 114 | 0 | 37 | 0 |
| 17 | Maharashtra | 7829 | 65 | 11011 | 55 | 14907 | 29 | 3356 | 10 | 12720 | 42 | 8578 | 27 | 19034 | 55 | 3173 | 1 |
| 18 | Manipur | 193 | 1 | 14 | 0 | 359 | 0 | 37 | 0 | 203 | 0 | 503 | 4 | 2548 | 0 | 64 | 0 |
| 19 | Mizoram | 136 | 0 | 68 | 0 | 42 | 0 | 67 | 0 | 83 | 0 | 1868 | 5 | 2060 | 2 | 234 | 0 |
| 20 | Nagaland | 357 | 0 | 369 | 0 | 8 | 0 | 1 | 0 | 24 | 0 | 154 | 0 | 4943 | 2 | 4 | 0 |
| 21 | Odisha | 4158 | 6 | 5198 | 5 | 3758 | 4 | 496 | 0 | 7548 | 0 | 7063 | 0 | 12845 | 1 | 322 | 0 |
| 22 | Punjab | 15398 | 18 | 14980 | 9 | 10289 | 14 | 8435 | 22 | 23389 | 55 | 11030 | 41 | 13687 | 39 | 162 | 0 |
| 23 | Rajasthan | 8427 | 14 | 9587 | 10 | 13706 | 17 | 2023 | 7 | 20749 | 96 | 13491 | 10 | 13924 | 14 | 1018 | 0 |
| 24 | Sikkim | 312 | 0 | 320 | 0 | 444 | 0 | 11 | 0 | 243 | 1 | 264 | 0 | 311 | 0 | 59 | 0 |
| 25 | Tamil Nadu | 23294 | 65 | 4486 | 13 | 8527 | 5 | 2410 | 0 | 6039 | 8 | 6430 | 8 | 9121 | 12 | 4778 | 2 |
| 26 | Tripura | 127 | 0 | 100 | 0 | 114 | 0 | 24 | 0 | 349 | 0 | 56 | 0 | 1447 | 0 | 257 | 0 |
| 27 | Telangana | 5369 | 0 | 4592 | 2 | 13331 | 7 | 2173 | 0 | 7135 | 0 | 8972 | 0 | 8016 | 1 | 1078 | 0 |
| 28 | Uttar Pradesh | 3092 | 28 | 3829 | 4 | 10557 | 26 | 3715 | 6 | 29750 | 29 | 19821 | 33 | 35402 | 36 | 341 | 1 |
| 29 | Uttrakhand | 849 | 0 | 689 | 3 | 10622 | 8 | 76 | 1 | 738 | 2 | 2337 | 0 | 4320 | 17 | 0 | 0 |
| 30 | West Bengal | 37746 | 46 | | | NR | NR | 5166 | 0 | 8264 | 7 | 67271 | 30 | 30683 | 4 | 441 | 0 |
| 31 | A& N Island | 18 | 0 | 49 | 0 | 168 | 0 | 98 | 0 | 175 | 0 | 1014 | 3 | 846 | 0 | 37 | 0 |
| 32 | Chandigarh | 1125 | 0 | 301 | 0 | 286 | 0 | 265 | 0 | 1596 | 3 | 910 | 1 | 454 | 0 | 0 | 0 |
| 33 | Delhi | 9271 | 10 | 7136 | 4 | 5077 | 0 | 1269 | 0 | 13089 | 23 | 10183 | 9 | 16866 | 19 | 381 | 0 |
| 34 | D&N Haveli | 2064 | 0 | 493 | 0 | 1491 | 2 | 248 | 0 | 547 | 0 | 685 | 0 | 1178 | 0 | 88 | 0 |
| 35 | Daman & Diu | 59 | 0 | 163 | 0 | 625 | 2 | 71 | 0 | 279 | 0 | 228 | 0 | 284 | 1 | 16 | 0 |
| 36 | Puduchery | 4568 | 7 | 592 | 2 | 2030 | 2 | 633 | 1 | 1625 | 1 | 1673 | 3 | 2790 | 2 | 874 | 0 |
| | Total | 188401 | 325 | 101192 | 172 | 157315 | 166 | 44585 | 56 | 193245 | 346 | 233251 | 303 | 289235 | 485 | 32091 | 32 |

(Above chart representation is *Provisional till 30th June 2024, C-Cases, D-Death, NR-Not reported, & *2023" WB Reported date till 13.09.2023 & 2024: WB reported date till 21.02.2024)

**1. Health:** Health is a state of complete physical, mental, and spiritual well-being, essential for smooth daily functioning and economic productivity. Good health reduces disease risk and enhances a country's economy and development. Varkey (2020)[1] found a positive correlation between health infrastructure and economic growth, highlighting the importance of strong health systems for economic efficiency. Ashwani

Kumar(2007) [2] commented that Malaria imposes great socio-economic burden on humanity, and with six other diseases like diarrhea, HIV/AIDS, tuberculosis, measles, hepatitis B, and pneumonia. Dengue and chikungunya also have been emerging as major vector-borne diseases. Kaur *(2022)* [3] highlighted that the global burden of dengue and chikungunya is increasing, creating significant social and economic challenges. Dengue is an emerging issue in India, where it is endemic in certain areas and often causes annual outbreaks. These outbreaks result in high rates of illness and death, leading to significant socioeconomic impacts. (Nitin Singh, 2023 )[4.]

The increase in dengue and malaria cases can significantly impact communities. High treatment costs strain finances, especially where healthcare is limited. Illnesses lead to lost work and school days, reducing productivity and economic growth. Overloaded healthcare systems face longer waits and diminished care quality. Tourism may drop in affected areas, hurting local businesses. Chronic health issues from these diseases can further undermine economic stability. In this study, I would like to focus on diseases like malaria and dengue problems in Kolkata and adjoining areas. Malaria and Dengue cases continue to rise in West Bengal, specifically in Kolkata.

**2. Illness:** Vector-borne diseases, such as malaria and dengue, are spread by parasites, viruses, or bacteria through bloodsucking insects like mosquitoes. Infected vectors can transmit diseases for life.

**(** Khatoon, Sajda 2021**)** [5] Researcher examined and commented that not only the country as a whole but also the whole of West Bengal is under the grip of all types of vector-borne diseases. In the KMC area is dominated by Malaria and Dengue.

**Dengue Symptoms:** Dengue symptoms include high fever, headache, pain behind the eyes, muscle and joint pain, nausea, and rash, lasting 2–7 days. Severe cases can cause plasma leakage and organ damage, potentially fatal. Warning signs like abdominal pain and bleeding appear later, requiring urgent medical care within 24-48 hours. (WHO, 2017*)*[6.] Hasan (2016*)* [7] notes that dengue impacts 2.5 billion people across more than 100 countries. The article highlights the crucial role of doctors in identifying varied symptoms and providing prompt, effective treatment.

**Malaria Symptoms:** Malaria symptoms usually start about seven days after an infected mosquito bite, with early signs including chills, severe headache, body aches, fever, weakness, nausea, and vomiting. Without treatment within 24 hours, it can be fatal (WHO) (Khatoon) [5.]

**Malaria,** spread by Anopheles mosquitoes, affects 219 million people worldwide annually and causes over 400,000 deaths, primarily in children under 5. (WHO, 2020*)* [8] Malaria, caused by Plasmodium parasites and transmitted by Anopheles mosquitoes, leads to severe illness like high fever and anemia. Despite being preventable and treatable, 3.2 billion people remain at risk. *(Khatoon)*[5]

**3. Health and Sustainable Development:** The Sustainable Development Goals (SDGs), established by the UN in 2015, outline a global blueprint to eradicate poverty, safeguard the planet, and promote peace and prosperity by 2030. Comprising 17 interconnected goals, the SDGs aim to achieve a balanced approach to social, economic, and environmental sustainability. Goal 3, dedicated to Good Health and Well-being, highlights the critical focus on health while emphasizing that all goals collectively support human well-being. ( Acharya, 2018)[9]. Aparicio-Martínez (2022*)* [10] emphasized that genuine sustainability balances economic, social, and environmental benefits. The research underscores how innovation and technology are crucial for enhancing population health and demonstrates how SDG goals work together to promote a more inclusive approach to sustainability. Joshi Lakshmi (2020*)* [11]explains that sustainable development, from an economic perspective, is about building a strong and productive economic foundation that supports long-term growth. Health and sustainable development are linked. Sustainable development ensures healthcare

access, boosting productivity and progress. A healthy environment prevents disease, promoting well-being and a stronger economy.

**4. Health Problem:** Dengue, a mosquito-borne viral infection, now impacts over half the world's population. Its spread has surged over the past 60 years, causing 10,000 deaths and 100 million infections annually across 125 countries. Today, half the global population resides in dengue-prone areas. (Messina 2019) [12]

The WHO estimates that insect-borne diseases like malaria and dengue account for one-sixth of global illnesses and disabilities. Each year, over a billion people are infected, and more than a million die, exacerbating health disparities and hindering development, especially in resource-limited tropical regions. Campbell-Lendrum (2015) [13] noted that vector-borne diseases like dengue and malaria have serious negative effects on both economies and health security. The severity of these epidemics is influenced by climate conditions, with global warming and climate changes worsening the situation. The main challenge is to quickly find effective solutions and improve health infrastructure to reduce disease rates.

Although, WHO's 2020 World Malaria Report showed India made significant progress in reducing malaria cases—60% since 2017 and 46% since 2018. Despite this progress, India still faces challenges on its path to eliminating malaria by 2030. (Rahi 2022)[14]

**5. Health Problem in India:** Many Indian states face major economic and healthcare challenges due to vector-borne diseases each year. Nitin Singh's (2022)[15] study highlights that dengue is becoming a serious issue in India, with frequent outbreaks causing high death rates and significant socio-economic impacts.

According to Mohita Nigam (2022)[16] research, In 2020, India made impressive progress in fighting malaria, cutting infection cases by 84.5% and fatalities by 83.6%. That year, 116 districts reported no malaria cases. However, Odisha had the highest number of cases at 41,739, followed by Chhattisgarh with 36,667 cases. In 2021, WHO India focused on high-burden states like Madhya Pradesh, West Bengal, Chhattisgarh, and Jharkhand, supporting efforts to reduce malaria. The National Strategic Plan for Malaria Elimination (2017-2022) helped improve diagnosis and treatment in remote areas.

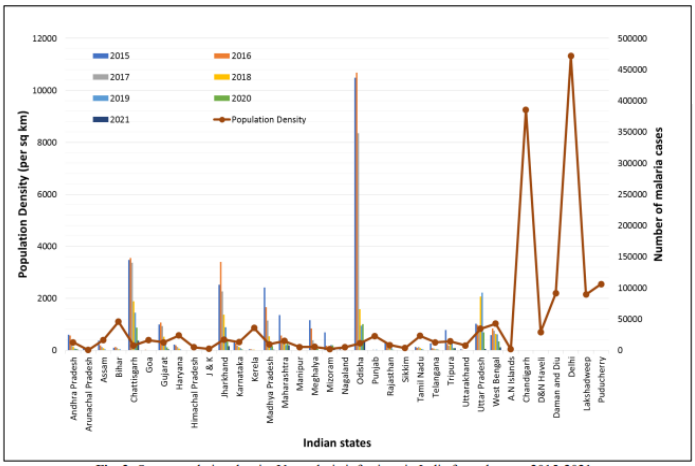



**Fig. 2:** State population density Vs. malaria infections in India from the year 2015-2021.
The data was collated from National Vector Borne Disease Control Programme webpage (6) and data given on the Indian population census (32) (https://www.indiacensus.net/density.php). The graph was plotted using Microsoft Excel.

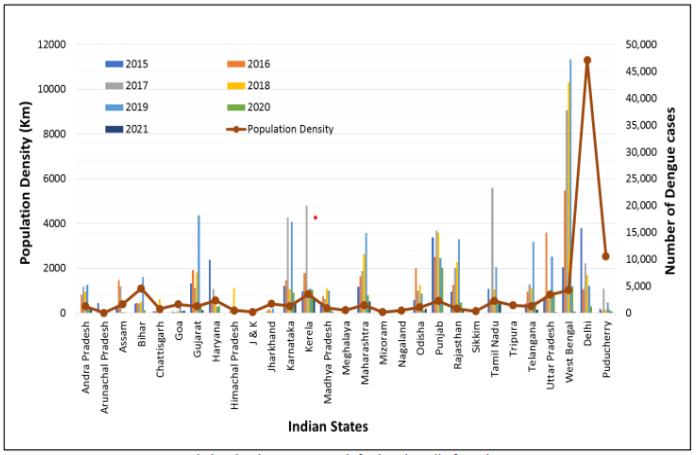



**Fig. 4:** State population density Vs. Dengue infections in India from the year 2015-2021.
This data was collated from National Vector Borne Disease Control Programme webpage and data given on the Indian population census (32) (https://www.indiacensus.net/density.php). The graph was plotted using the tool Microsoft Excel.

**The epidemiology of malaria and dengue in India in the year 2015-2021 was studied in this research**

**paper.**

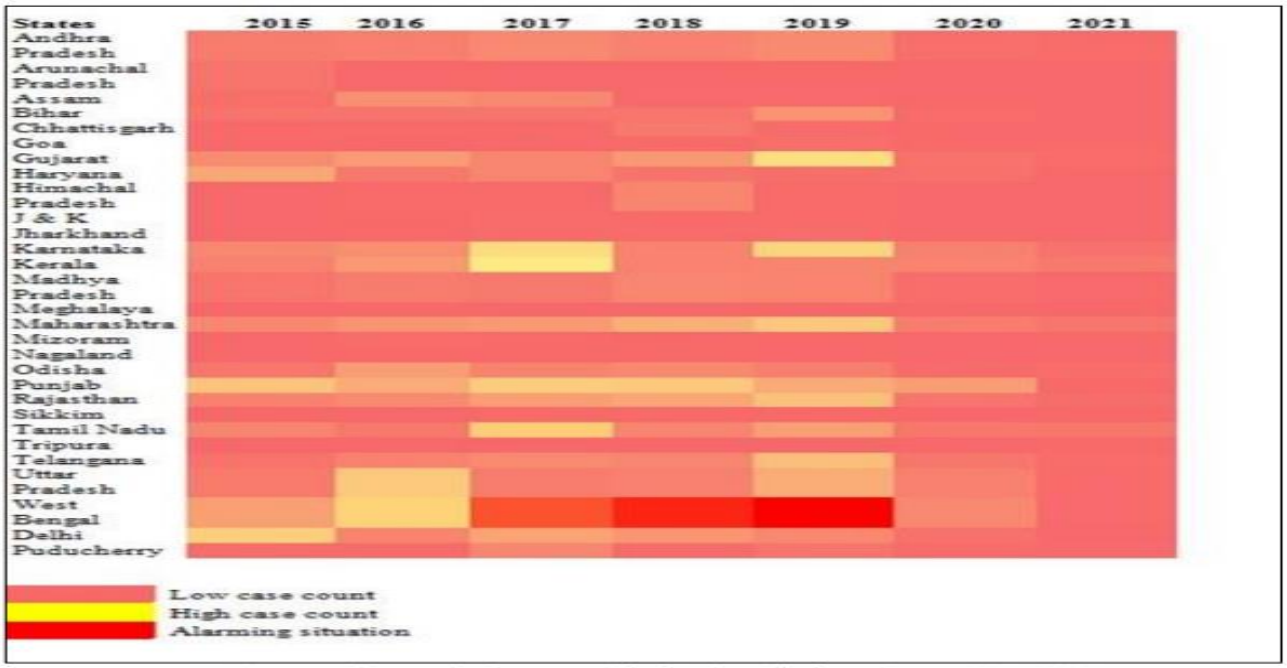
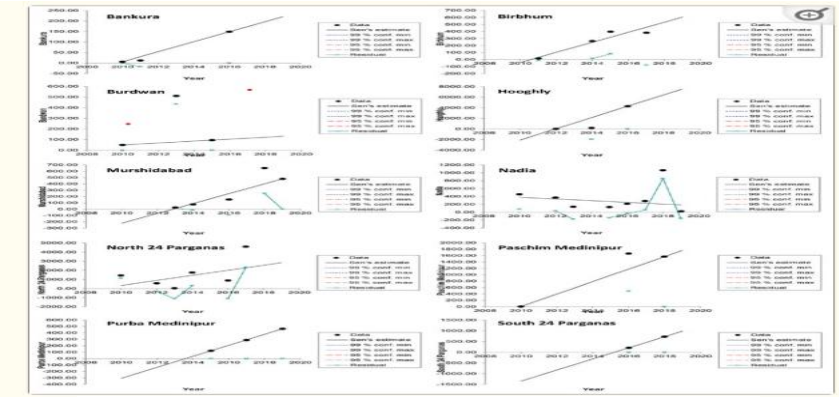



**Fig. 3:** State-wise trends of Dengue infection in India from the year 2015-2021. This data was collated from National Vector Borne Disease Control Programme webpage (6). (https://nvbdcp.gov.in/index4.php?lang=1&level=0&linkid=431&lid=3715). The graph was plotted using Microsoft Excel.

But the number of dengue cases in India increased gradually from 2016. West Bengal was dealing with a dengue fever outbreak that had reached epidemic proportions from 2016.

**6. Problems in West Bengal**: The State of West Bengal is uniquely positioned with its innate geographical vulnerabilities that favour outbreaks of a host of infectious diseases. West Bengal's northern districts are particularly prone to outbreaks of infectious diseases, including dengue. (P K Sharma , 2021)[17]. A K Hati (2012)[18] studied dengue and malaria co-infections in Kolkata, underscoring the need for improved diagnosis and treatment. Jitendra Majhi (2020) [19] highlights dengue's significant health impact, with 390 million infections yearly, mostly in Asia.

Researcher stated that dengue outbreaks are more common and frequent in gangetic west Bengal. He draws a map of dengue outbreaks in 12 districts the gangetic west Bengal. All Studies stress the need for enhanced awareness and control to manage this significant health issue.




Trends of Dengue Outbreak Cases in Districts of Gangetic West Bengal from 2010 to 2019

***7.*** **Other Countries:** Zhilin Zeng (2021)[20] research shows that dengue is a major global health challenge. Despite varying incidence rates, the overall burden of dengue is rising. Their findings can help policymakers design effective interventions to reduce dengue, especially in high-incidence areas.
Dengue fever, prevalent in tropical and subtropical regions, has dramatically increased globally, especially in the Americas, South-East Asia, and the Western Pacific. Xia Wang 's (2021)[21] study adds to this by noting that even in countries like Japan, which was once dengue-free, imported cases are now occurring, revealing how dengue's reach is expanding. In Vietnam, Thang Nguyen-Tien's (2021)[22] study revealed that many people in Hanoi are still unaware of effective dengue prevention methods.

Dengue fever poses a significant challenge in Pakistan, where poor sanitation, unsafe water, overcrowding, and a large refugee population exacerbate the problem. Javid Ali (2015)[23] points out that the lack of vaccines complicates treatment, and the country's struggle is further compounded by low awareness and socio-economic issues. Muhammad Essa (2022)[24] adds that distinguishing dengue from malaria is clinically difficult, yet their treatments differ. His research in Multan highlights the urgent need for improved public awareness and effective policies to tackle both diseases, especially given their increasing prevalence in Asia. Griffiths (2013)[25] highlights that dengue affects 2.5 billion people globally, with her study focusing on Nepal's management of outbreaks through case reporting, surveillance, and community response. In contrast, Bhutan faced its largest dengue epidemic in 2019, surpassing all previous years' cases. T sheten's (2019)[26] research examines the spatial and temporal patterns of this outbreak to improve future management and planning, emphasizing the epidemic's characteristics and virus transmissibility.

Gisléia Benini Duarte (2019) [27] found that in Brazil, dengue, Zika, and chikungunya are difficult to distinguish due to similar symptoms. Though they often resolve on their own, they can sometimes lead to severe conditions like dengue hemorrhagic fever. The study also examined how local oversight in 70 of Brazil's municipalities affects dengue cases. Yukiya Kurahashi (2021)[28] explored how undernutrition affects children's vulnerability to dengue, malaria, and diarrhea in a district along the Thai–Myanmar border. His study revealed that poor nutrition increases the risk of these diseases and leads to higher death rates among children. By reviewing hospital cases, the research highlighted the urgent need to address both nutrition and disease prevention in this region.

Dengue has become a significant public health concern in Bangladesh, notably during the severe outbreak of 2019. A study surveyed 1,010 people across nine regions to explore socio-economic factors and assess their knowledge, attitudes, and practices regarding the disease. (Nur E. Alam, 2021) [29]

***8.*** **Health and Communication:** Deepak Gupta (2021) [30] highlighted that communication is crucial for disease prevention and health improvement. His report emphasizes the role of strategic communication in health and development, including disease control. The study aims to explore how effective communication can inform, educate, and influence, especially during health crises. Nova Corcoran (2013)[31] emphasizes the importance of health communication in public health by connecting theory with practice. She highlights the need to understand specific audiences, use culturally sensitive methods, and effectively utilize mass media and technology for successful health promotion.

Media is key in health communication, using print, TV, and radio to spread information. Bimolchandra Singh (2020)[32] focused on radio's role, specifically analyzing health programs from All India Radio, Imphal. His study digs into how effective these radio programs are at the grassroots level across various districts. Neelesh Pandey (2017)[33] highlighted that media, especially television, can significantly improve public awareness and child-rearing practices. Effective media programs for parents of young children (ages 0-6) can enhance knowledge in areas like health, nutrition, and development. These programs not only inform parents but also help communities utilize available services better. Like Radio and TV, newspaper coverages also are the important part of health communication. Its main goal is to influence people's behaviors and encourage healthier habits. By highlighting health issues, newspapers not only inform the public but also impact policymakers. Hemant Kumar Pandey (2023)[34] analyzed health content from Jaipur's top four newspapers, both Hindi and English. His study highlights the critical role newspapers play in shaping health awareness. During the pandemic, newspapers greatly increased their health coverage, though sensational and often misleading Coronavirus stories dominated, while other diseases were overlooked. Despite criticism from media educators, readers largely trusted and acted on the health information provided.

Augustine, J shows (2017) [35] in a study that daily newspapers are the most trusted source of health information in rural Kerala, with television being important but less credible. Preferences vary by gender and education: higher-educated people prefer specialized magazines, while those with lower education rely more on newspapers and TV. These insights highlight the need for customized health communication strategies to better reach different groups and improve public health awareness.

Folk media, with their deep roots in tradition and rural culture, are both affordable and incredibly effective in reaching rural communities. Malabika Singh (2022)[36] examined how these traditional methods boost development and health in rural Bihar. Unlike pricey mainstream media like TV and newspapers, folk media are cost-effective and have been valued since the first Five Year Plan of 1951. They play a vital role alongside radio, film, and drama in communicating with the masses.
Researcher Junhan Chen (2021) [37] highlights how social media's role in health communication has significantly evolved. It now encompasses efforts by government agencies and NGOs to enhance public health. Additionally, social media serves as a powerful tool for social mobilization, allowing communities to effectively raise awareness about health issues.

The relationship between health communication and the media is symbiotic. The media serves as a powerful platform for health communication, influencing public perceptions, disseminating information, and playing a pivotal role in promoting public health and well-being.

## CONCLUSION

Health has always been treated as one of the important part of our life so proper care of health in any manner should have a prioritize effort under any condition. People health significantly contributes to the country's economy and sustainable growth. Any endemic like malaria, Dengue, chikungunya etc. may badly affect a large number of people of a society and if it is not controlled on time these may significantly put a negative force to the growth of the economy of the country.

This study was started with various aspect of common endemic causes due to malaria and dengue in West Bengal where-as during the study it is found that the severity effect of Malaria has been reduced satisfactorily but instead of various efforts by Govt. and other responsible bodies the effect of dengue hold

its position strongly rather folded upside which is a prime concern in present time. Hence the study focused mainly based on the Dengue and its various aspect with possible controls mainly in the state of West Bengal which is currently score on topside of the dengue cases in the country.

Dengue and its adverse effects is not limited to a state or a country but it has become a global health care issue. WHO health targets 2030 (sustainable development goals) agenda provides for strong political commitment to public health for which a quality healthcare module must be adopted by controlling various factors and control of dengue is one of them. A proper modernize healthcare communication and it's scientifically implementation could be a changing factors to achieve the goal.

## REFERENCES

Varkey, R., Joy, J., & Panda, P. K. (2020b). Health infrastructure, Health outcome and Economic Growth: Evidence from Indian Major States. ResearchGate. https://www.researchgate.net/publication/343826271_Health_infrastructure_Health_outcome_and_Economic_Growth_Evidence_from_Indian_Major_States

Kumar, A., Valecha, N., Jain, T., & Dash, A. P. (2007). Burden of malaria in India: retrospective and prospective view. The American Journal of Tropical Medicine and Hygiene, 77(6 Suppl), 69–78. https://pubmed.ncbi.nlm.nih.gov/18165477/

Baharia, R., Kaur, J., Yadav, C., & Chauhan, N. (2022). Economic burden estimation associated with dengue and chikungunya in Gujarat, India. Journal of Family Medicine and Primary Care, 11(9), 5393. https://doi.org/10.4103/jfmpc.jfmpc_694_21

Singh, N., Amresh Kumar Singh, & Kumar, A. (2023). Dengue outbreak update in India: 2022. Indian Journal of Public Health, 67(1), 181–183. https://doi.org/10.4103/ijph.ijph_1517_22

Khatoon, S. (2021). Prevalence of Vector Borne Diseases A Case Study of KMC area of Kolkata District West Bengal. Inflibnet.ac.in. http://hdl.handle.net/10603/362424

WHO Report Dengue and severe dengue (who.int)

Hasan, S., Jamdar, S., Alalowi, M., & Al Ageel Al Beaiji, S. (2016). Dengue virus: A global human threat: Review of literature. Journal of International Society of Preventive and Community Dentistry, 6(1), 1. https://doi.org/10.4103/2231-0762.175416

World Malaria Report 2020 (who.int)

Acharya, S., Lin, V., & Dhingra, N. (2018). The role of health in achieving the sustainable development goals. Bulletin of the World Health Organization, 96(9),591–591A https://doi.org/10.2471/blt.18.221432

Aparicio-Martínez, P., Martinez-Jimenez, M. P., & Perea-Moreno, A.-J. (2022). Health Environment and Sustainable Development. International Journal of Environmental Research and Public Health, 19(13). https://doi.org/10.3390/ijerph19138175

Joshi Lakshmi. (2024). Developing Indicators of Sustainability in Development. Inflibnet.ac.in. http://hdl.handle.net/10603/300699

Messina, J. P., Brady, O. J., Golding, N., Kraemer, M. U. G., Wint, G. R. W., Ray, S. E., Pigott, D. M., Shearer, F. M., Johnson, K., Earl, L., Marczak, L. B., Shirude, S., Davis Weaver, N., Gilbert, M., Velayudhan, R., Jones, P., Jaenisch, T., Scott, T. W., Reiner, R. C., & Hay, S. I. (2019). The current and future global distribution and population at risk of dengue. Nature Microbiology, 4(9), 1508–1515. https://doi.org/10.1038/s41564-019-0476-8

Campbell-Lendrum, D., Manga, L., Bagayoko, M., & Sommerfeld, J. (2015). Climate change and vector-borne diseases: what are the implications for public health research and policy? Philosophical Transactions

of the Royal Society B: Biological Sciences, 370(1665), 20130552–20130552. https://doi.org/10.1098/rstb.2013.0552

Rahi, M., & Sharma, A. (2022). Malaria control initiatives that have the potential to be gamechangers in India's quest for malaria elimination. The Lancet Regional Health - Southeast Asia, 2, 100009. https://doi.org/10.1016/j.lansea.2022.04.005

Singh, N., Amresh Kumar Singh, & Kumar, A. (2023). Dengue outbreak update in India: 2022. Indian Journal of Public Health, 67(1), 181–183. https://doi.org/10.4103/ijph.ijph_1517_22

Nigam, M., Shrivastava, A., & Patil, G. (n.d.). Prevalence of Malaria and Dengue in India: In view of the 2021 Dengue outbreak. Scientific Research Journal of Medical Sciences, 2, N/A–N/A. https://doi.org/10.47310/srjms.2022.v02i02.001

Sharma, P. K., & Tilak, R. (2021). Outbreak prone communicable diseases of public health importance in the northern districts of West Bengal - Current status & the way forward. The Indian Journal of Medical Research, 153(3), 358–366. https://doi.org/10.4103/ijmr.IJMR_607_21

Hati, A. K., Bhattacharjee, I., Mukherjee, H., Bandyopadhayay, B., Bandyopadhyay, D., De, R., & Chandra, G. (2012). Concurrent dengue and malaria in an area in Kolkata. Asian Pacific Journal of Tropical Medicine, 5(4), 315–317. https://doi.org/10.1016/S1995-7645(12)60046-7

Majhi, J., Singh, R., Yadav, V., Garg, V., Sengupta, P., Atul, P., & Singh, H. (2020). Dynamics of dengue outbreaks in gangetic West Bengal: A trend and time series analysis. Journal of Family Medicine and Primary Care, 9(11), 5622. https://doi.org/10.4103/jfmpc.jfmpc_800_20

Zeng, Z., Zhan, J., Chen, L., Chen, H., & Cheng, S. (2021). Global, regional, and national dengue burden from 1990 to 2017: A systematic analysis based on the global burden of disease study 2017. EClinical Medicine, 32(100712), 100712. https://doi.org/10.1016/j.eclinm.2020.100712

Wang, X., & Nishiura, H. (2021). The Epidemic Risk of Dengue Fever in Japan: Climate Change and Seasonality. Canadian Journal of Infectious Diseases and Medical Microbiology, 2021, 1–13. https://doi.org/10.1155/2021/6699788

Nguyen-Tien, T., Do, D. C., Le, X. L., Dinh, T. H., Lindeborg, M., Nguyen-Viet, H., Lundkvist, Å., Grace, D., & Lindahl, J. (2021). Risk factors of dengue fever in an urban area in Vietnam: a case-control study. BMC Public Health, 21(1). https://doi.org/10.1186/s12889-021-10687-y

Ali, J. (2015). Dengue fever in Pakistan: Challenges, priorities and measures. Journal of Coastal Life Medicine, 3(10), 834–837. https://doi.org/10.12980/jclm.3.2015j5-30

Essa, M., Taj, M. A., Khan, M. H., Bashir, M. A., Farooq, H., Alajmi, R. A., Hashem, M., Alamri, S., El-Zohri, M. A., & Ullah, K. (2022). Awareness and perception of malaria and dengue at school and college level in the district of Multan. PLOS ONE, 17(2), e0260868. https://doi.org/10.1371/journal.pone.0260868.

Griffiths, K., Banjara, M. R., O'Dempsey, T., Munslow, B., & Kroeger, A. (2013). Public Health Responses to a Dengue Outbreak in a Fragile State: A Case Study of Nepal. Journal of Tropical Medicine, 2013, 1–8. https://doi.org/10.1155/2013/158462

Tsheten, T., Mclure, A., Clements, A. C. A., Gray, D. J., Wangdi, T., Wangchuk, S., & Wangdi, K. (2021). Epidemiological Analysis of the 2019 Dengue Epidemic in Bhutan. International Journal of Environmental Research and Public Health, 18(1), 354. https://doi.org/10.3390/ijerph18010354

Benini Duarte, G., de Souza Melo, A., & Firmino Costa da Silva, D. (2018). Do government audits reduce dengue? Estimating the impact of federal monitoring lotteries program on dengue incidence. International Journal of Health Economics and Management, 19(3-4), 359–369. https://doi.org/10.1007/s10754-018-9259-7

Kurahashi, Y., Hattasingh, W., Chatchen, S., Yingtaweesak, T., & Sirivichayakul, C. (2021). Association of undernutrition with dengue, malaria and acute diarrhea among children in a Thai–Myanmar border. Journal of Public Health. https://doi.org/10.1093/pubmed/fdab146

Hossain, Md. I., Alam, N. E., Akter, S., Suriea, U., Aktar, S., Shifat, S. K., Islam, Md. M., Aziz, I., Islam, Md. M., Islam, Md. S., & Mohiuddin, A. K. M. (2021). Knowledge, awareness and preventive practices of dengue outbreak in Bangladesh: A countrywide study. PLOS ONE, 16(6), e0252852. https://doi.org/10.1371/journal.pone.0252852

Gupta, D., Jai P, N., & Yadav, S. J. (2021). Strategic Communication in Health and Development: Concepts, Applications and Programming. Journal of Health Management, 23(1), 95–108. https://doi.org/10.1177/0972063421994943

Nova Corcoran, Communicating Health: Strategies for Health promotion, Sage Publication

Singh, M. B. (2018). Radio as an instrument of health communication a critical analysis of radio health programs with special reference to all india radio imphal. University. https://shodhganga.inflibnet.ac.in/handle/10603/306634

Pandey, N. (2017). The Role of Television on Health Care of Women and Children A Study of Varanasi District. University. https://shodhganga.inflibnet.ac.in/handle/10603/166771

Pandey, H. K. (2018). Recent Trends in Health Reporting in Leading Newspapers of Jaipur A Study From 1st January 2020 to 31st December 2020. Inflibnet.ac.in. http://hdl.handle.net/10603/482735

Augustine, J. M. P. (2017). The role of mass media in rural health communication: a micro level study Kerala. ResearchGate. https://www.researchgate.net/publication/333531786_The_Role_of_Mass_Media_in_Rural_Health_Communication_A_Micro_Level_Study_in_Kerala

Singh, M. (2021). Folk Media and Health Communication in Rural Bihar. Inflibnet.ac.in. http://hdl.handle.net/10603/402694

Chen, J., & Wang, Y. (2020). Social media usage for health purposes: Systematic review. Journal of Medical Internet Research, 23(5). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8156131/