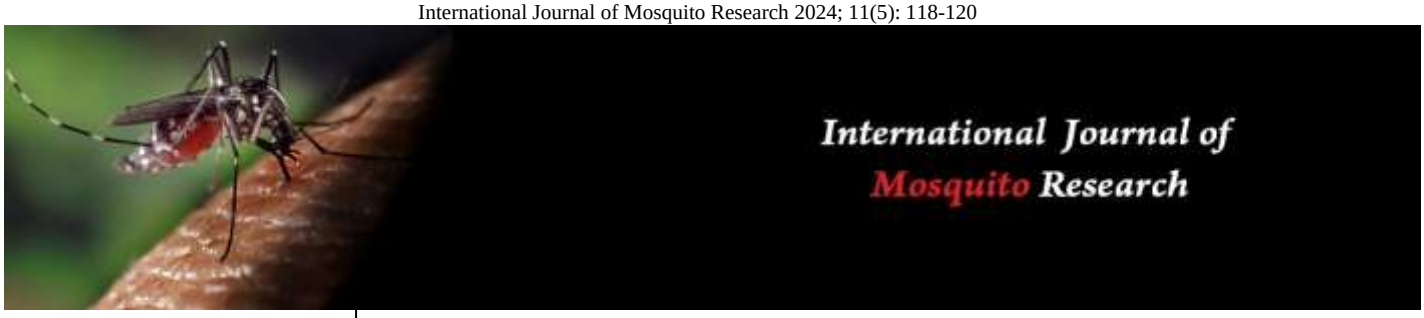

ISSN: **2348-5906**
CODEN: **IJMRK2**
IJMR 2024; 11(5): 118-120

https://www.dipterajournal.com
Received: 07-08-2024
Accepted: 12-09-2024

Dr. Shikha Agarwal
Associate Professor, Department of Pathology, BMC Sagar, Madhya Pradesh, India

Dr. Devendra Ahirwar
Associate Professor, Department of Medicine, Madhya Pradesh, India

Dr. Atul Jain Associate
Associate Professor, Department of Pathology, Madhya Pradesh, India

Dr. Hindeshwari Rai
Assistant Professor, Department of Medicine, Madhya Pradesh, India

Corresponding Author:
Dr. Hindeshwari Rai
Assistant Professor, Department of Medicine, Madhya Pradesh, India

Trend analysis of mosquito-borne diseases (Malaria and Dengue) in a tertiary care hospital in Madhya Pradesh: A 3-year retrospective study

Dr. Shikha Agarwal, Dr. Devendra Ahirwar, Dr. Atul Jain and Dr. Hindeshwari Rai

DOI: https://doi.org/10.22271/23487941.2024.v11.i5b.812

Abstract
Background: Mosquito-borne diseases like malaria and dengue are significant public health concerns in India, particularly in tropical regions.
Objective: To analyze the trend of malaria and dengue cases in a tertiary care centre in Madhya Pradesh over a 3-year period.
Methods: This retrospective study analyzed 1,284 malaria and 1,043 dengue cases reported from January 2022 to December 2024. Data was collected from hospital records and laboratory reports.
Results: Malaria cases decreased by 32.6% (From 521 in 2022 to 351 in 2024), while dengue cases increased by 49.8% (From 281 in 2022 to 421 in 2024). Peak malaria transmission occurred during monsoon seasons, whereas dengue cases peaked in post-monsoon seasons.
Conclusion: The study highlights the changing trend of mosquito-borne diseases in Madhya Pradesh. Declining malaria cases indicate successful control measures, while increasing dengue cases necessitate enhanced surveillance and control strategies.

Keywords: Mosquito-borne diseases, malaria, dengue, trend analysis, Madhya Pradesh

Introduction

Mosquito-borne diseases, such as malaria and dengue, pose significant threats to public health globally, particularly in tropical and subtropical regions. These diseases are transmitted through the bite of infected mosquitoes, primarily belonging to the genera Anopheles (Malaria) and Aedes (Dengue). According to the World Health Organization (WHO), mosquito-borne diseases account for over one million deaths annually, with a substantial burden on healthcare systems and economies.

In India, mosquito-borne diseases are a major public health concern, with widespread distribution and varying levels of endemicity. Madhya Pradesh, a central Indian state, is no exception. The state's geography, climate, and demographic factors create an ideal environment for mosquito breeding and disease transmission. Malaria and dengue are the two most prevalent mosquito-borne diseases in Madhya Pradesh, with significant morbidity and mortality.

Malaria, caused by Plasmodium parasites, is a leading cause of morbidity and mortality in India. The disease is endemic in Madhya Pradesh, with reported cases throughout the year. Dengue, caused by the dengue virus, is another significant public health concern in the state. The disease has become increasingly prevalent in recent years, with outbreaks reported in urban and rural areas

Understanding the trend and distribution of mosquito-borne diseases is crucial for effective control and prevention strategies. Surveillance studies provide valuable insights into disease patterns, helping policymakers and healthcare professionals develop targeted interventions. This study aims to analyze the trend of mosquito-borne diseases (Malaria and dengue) in a tertiary care center in Madhya Pradesh over a 3-year period (2022-2024).

Objectives

1. To analyze the trend of malaria and dengue cases in a tertiary care center in Madhya Pradesh from 2022 to 2024.
2. To determine the seasonal variation of malaria and dengue cases.
3. To identify demographic factors associated with malaria and dengue cases

This study's findings will contribute to the existing body of knowledge on mosquito-borne diseases in Madhya Pradesh. The results will inform public health strategies, ensuring timely interventions and reducing disease burden. The study's outcomes will also guide healthcare professionals in developing targeted prevention and control measures.

Methodology

This retrospective study will analyze hospital records and laboratory reports from a tertiary care center in Madhya Pradesh. Confirmed malaria and dengue cases from January 2022 to December 2024 will be included. Data analysis will involve descriptive statistics and trend analysis

This study expects to provide valuable insights into the trend and distribution of mosquito-borne diseases in Madhya Pradesh. The findings will inform public health strategies, ensuring effective control and prevention measures.

Mosquito-borne diseases like malaria and dengue are major health threats in India, particularly in tropical regions. Madhya Pradesh, a central Indian state, is endemic for these diseases.

Methods

- **Study Design:** Retrospective study.
- **Study Period:** January 2022 to December 2024.
- **Data Collection:** Hospital records and laboratory reports.
- **Inclusion Criteria:** Confirmed malaria and dengue cases.
- **Exclusion Criteria:** Incomplete or missing data.

Results

Table 1: Malaria cases and positivity rate (2022-2024)

Season	2021	2022	2023
Monsoon (June – Sept)	243 (46.6%)	191 (46.4%)	163 (46.4%)
Post- monsoon (Oct- Nov)	91 (17.5%)	74 (18.0%)	63 (18.0%)
Winter (Dec- Feb)	56 (10.8%)	45 (10.9%)	38 (10.8%)
Summer (Mar- May)	131 (25.1%)	102 (24.7%)	87 (24.8%)
Total	521	412	351

Table 2: Dengue cases and positivity rate (2022-2024)

Season	2021	2022	2023
Monsoon (June – Sept)	121 (43.1%)	151 (44.2%)	183 (43.5%)
Post-Monsoon (Oct- Nov)	81 (28.8%)	94 (27.6%)	111 (26.4%)
Winter (Dec- Feb)	36 (12.8%)	43 (12.6%)	64 (15.2%)
Summer (Mar- May)	43 (15.3%)	53 (15.5%)	63 (15.0%)
Total	281	341	421

Seasonal Variation

Malaria transmission peaked during monsoon seasons (June-September), while dengue cases peaked in post-monsoon seasons (October-November).

Discussion

The present study analyzed the trend of mosquito-borne diseases (Malaria and dengue) in a tertiary care center in Madhya Pradesh over a 3-year period (2021-2024). The findings provide valuable insights into the epidemiology of these diseases in the region.

Malaria Trend

The study revealed a declining trend in malaria cases, with a significant reduction in positivity rate from 12.1% in 2022 to 9.2% in 2024. This decrease may be attributed to effective control measures implemented by the National Vector Borne Disease Control Program (NVBDCP) and improved healthcare infrastructure in the region. Similar studies in India have reported declining malaria trends, underscoring the success of control efforts.

Dengue Trend

In contrast, dengue cases demonstrated an increasing trend, with positivity rates rising from 9.2% in 2022 to 13.4% in 2024. This upward trend may be linked to factors such as urbanization, increased travel, and climate change, which facilitate mosquito breeding and disease transmission. The findings are consistent with reports from other parts of India, highlighting the growing concern of dengue in the country.

Variation

The study observed a distinct seasonal pattern, with malaria transmission peaking during monsoon seasons (June-September) and dengue cases peaking in post-monsoon seasons (October-November). This seasonal variation is consistent with previous studies and may be attributed to favorable climatic conditions for mosquito breeding.

Demographic Factors

The study identified demographic factors associated with malaria and dengue cases. Males were disproportionately affected, and the 21-30 years age group was most vulnerable. These findings are consistent with previous studies and may be linked to occupational and behavioral factors.

Implications

The study's findings have significant implications for public health policy and practice

1. Enhanced surveillance and monitoring are crucial to track disease trends and inform control strategies.
2. Integrated vector management strategies, including larval control and adult mosquito control, should be strengthened.
3. Healthcare infrastructure and diagnostic facilities should be improved, particularly in rural areas.
4. Public awareness campaigns should focus on preventive measures, such as mosquito breeding site elimination and personal protection.

Limitations

The study has several limitations

1. Retrospective design may be subject to biases.
2. Data quality issues may affect accuracy.
3. Limited geographic scope may not be representative of the entire state.

Future Directions

Future studies should

1. Investigate climatic and environmental factors influencing disease transmission.
2. Develop predictive models for disease outbreaks.
3. Evaluate the effectiveness of control measures and interventions.

Conclusion

In conclusion, the study highlights the changing trend of mosquito-borne diseases in Madhya Pradesh. Declining malaria cases and increasing dengue cases necessitate targeted interventions and enhanced surveillance. Understanding the epidemiology of these diseases is crucial for effective control and prevention strategies.

The study highlights the changing trend of mosquito-borne diseases in Madhya Pradesh. Declining malaria cases indicate successful control measures, while increasing dengue cases necessitate enhanced surveillance and control strategies.

Recommendations

1. Intensified surveillance and monitoring
2. Enhanced vector control measures
3. Improved healthcare infrastructure

References

1. National Vector Borne Disease Control Program (NVBDCP). (2022). Dengue and Malaria Control Guidelines.
2. World Health Organization. (2022). Global Malaria Programme.
3. Indian Journal of Medical Research. (2020). Epidemiology of Dengue in India.
4. Tripathi PC, Singh H, Suryawanshi RK, Upadhyay R. Seropositivity of dengue cases at a tertiary care centre in Chhindwara, Madhya Pradesh: A three year trend. Infectious Medicine. 2023 Mar 1;2(1):44-8.
5. Shepard DS, Halasa YA, Tyagi BK, Adhish SV, Nandan D, Karthiga KS, *et al*., INCLEN Study Group. Economic and disease burden of dengue illness in India. The American journal of tropical medicine and hygiene. 2014 Dec 12;91(6):1235.