Research Article

# Hospital-Based Assessment of Management Strategies for Communicable Diseases in a Tertiary Care Centre of Uttar Pradesh, India

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**Background:** Communicable diseases continue to pose a major public health challenge in Uttar Pradesh, India, despite implementation of various state and national disease-control programmes. Evaluation of hospital-based management strategies is essential for understanding disease burden and treatment outcomes during peak transmission periods.

**Objectives:** To assess the pattern of diagnosis and management of selected communicable diseases in a tertiary care hospital of central Uttar Pradesh during the peak seasonal period.

**Materials and Methods:** A prospective hospital-based observational study was conducted at a district hospital attached to a Government Medical College in central Uttar Pradesh from July 2023 to December 2023. However, analysis for seasonal trend assessment was restricted to the peak transmission period from September 2023 to November 2023. All patients attending outpatient departments (OPD) and inpatient departments (IPD) who underwent diagnostic testing for selected communicable diseases were included. Diseases assessed included dengue, malaria, scrub typhus, leptospirosis, chikungunya, and Japanese encephalitis. Data regarding diagnostic tests, confirmed positive cases, admissions, discharges, referrals, and mortality were collected from hospital laboratory and clinical records. Descriptive statistical analysis was performed using frequencies and percentages.

**Results:** During the study period, 4,287 patients underwent diagnostic testing for communicable diseases. Malaria accounted for 965 (30.9%) confirmed cases, while dengue accounted for 363 (31.2%) confirmed cases among those tested. Only two cases of scrub typhus were identified, and no confirmed cases of leptospirosis, chikungunya, or Japanese encephalitis were reported during the peak study period. Most patients were managed at the OPD level, while a smaller proportion required IPD admission. No mortality was reported among the studied communicable disease cases during the study period.

**Conclusion:** The majority of communicable disease cases in the study setting were successfully managed at the outpatient level, with limited need for hospitalization and no reported mortality. Strengthening diagnostic surveillance, inpatient management facilities, and disease-monitoring systems may further improve communicable disease management in tertiary care settings.

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## Introduction

Communicable diseases are types of illnesses that are caused by certain viruses or bacteria, and they can be passed from one person to another through different ways like touching contaminated surfaces, coming into contact with bodily fluids or blood, being bitten by insects, or even through the air.[1] These diseases are a major issue for public health, especially in countries like India, where they affect a large number of people. In particular, in highly populated areas such as Uttar Pradesh, these diseases remain a serious concern. In Uttar Pradesh, there are frequent outbreaks of communicable diseases, and this is due to several factors. The climate is often favourable for the spread of such diseases, and the rapid growth of urban areas has led to overcrowding and poor sanitation. These conditions create the perfect environment for disease-carrying vectors, like mosquitoes, to thrive. As a result, diseases

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that are spread by vectors, such as dengue, malaria, scrub typhus, chikungunya, and Japanese encephalitis, continue to be a major cause of illness and place a heavy burden on the healthcare system. Even though there are ongoing efforts at both the national and state levels to control these diseases, they still pose a significant challenge.

According to a study[2], the burden of communicable diseases, along with maternal, neonatal, and nutritional issues, is quite high in Uttar Pradesh. Specifically, it was found that these conditions account for about 40.5% of the total disease burden in the state, with diarrheal diseases, lower respiratory infections, and tuberculosis being the main causes of death. Further, according to reports from 2023, there were eight deaths related to dengue in Uttar Pradesh, while no deaths were recorded for kala-azar or malaria. These statistics highlight the ongoing challenges and the need for continued efforts to combat these diseases.

Previous studies[3-11] conducted in India have also highlighted a significant health challenge in Uttar Pradesh, where communicable diseases have caused a heavy burden, especially during the monsoon and the months that follow. Dengue and malaria have consistently been among the most commonly reported vector-borne diseases in northern India. In recent times, scrub typhus and acute encephalitis syndrome have also become major public health issues in several districts of Uttar Pradesh. In one study[10], leptospirosis was identified as one of the key causes of acute fever in the central and eastern regions of the state. The findings of that study suggested that improving diagnostic facilities and increasing awareness among healthcare providers about leptospirosis are essential for early detection and management of the disease in patients with acute fever, which could help in reducing the severity and death rate linked to this illness. Another study[11] concluded that illnesses related to the monsoon season are influenced by changes in people's behaviours and lifestyle, such as maintaining cleanliness and improving sanitation, which were promoted during the COVID-19 pandemic. This study emphasized the value of these general hygiene practices and their role in reducing monsoon-related diseases over the long term.

To address these kinds of issues, the government has introduced various programmes aimed at reducing the spread of communicable diseases. These include campaigns focused on disease control and comprehensive strategies to manage vector-borne illnesses. These initiatives help in monitoring the spread of diseases more effectively and improving the outcomes of treatment. Starting in 2023, the Uttar Pradesh government launched a month-long campaign aimed at addressing communicable diseases across the state from April of that year. The campaign focused on controlling diseases that spread through contact and vectors like mosquitoes, and different departments were given specific tasks to ensure its effective implementation. However, the results of this campaign have been inconsistent. Six vector-borne diseases (VBDs)—namely malaria, dengue, chikungunya, Japanese encephalitis (JE), kala-azar, and lymphatic filariasis—are currently prevalent in Uttar Pradesh. But since 2016, these diseases have been deemed manageable in the state due to ongoing efforts. Therefore, the long-term impact of this campaign on the overall prevalence of communicable diseases in Uttar Pradesh requires further detailed study.

Despite the numerous disease-control initiatives currently in place in Uttar Pradesh, there is a lack of hospital-based data on how these diseases are managed in tertiary care hospitals in central Uttar Pradesh. Information about how patients are treated in outpatient departments (OPD) and inpatient departments (IPD) during peak transmission times is still limited. Hence, the present study was conducted to evaluate the patterns of diagnosis and management of selected communicable diseases in a tertiary care hospital in central Uttar Pradesh during the peak transmission period from September to November 2023. Given that Uttar Pradesh is one of the most densely populated states in India, it is crucial to conduct such detailed studies to understand why the burden of communicable diseases continues to rise despite the availability of various management strategies.

## Materials and Methods

### *Study Design and Setting*

This study was hospital-based observational research conducted at a district hospital affiliated with Autonomous State Medical College in Hardoi, Uttar Pradesh. The study spanned six months, starting from 1st July 2023 to 31st December 2023. However, for analysing the seasonal trend of communicable diseases, the focus was narrowed down to the peak transmission period, which was from 1st September 2023 to 30th November 2023.

Informed consent was obtained from all patients or their family members who participated in the study. This was done after thoroughly explaining the benefits of the study, and a standard form was used for this purpose. A total of 20,447 patients, including both inpatients and outpatients from various medical departments of the hospital, were included in the study. The diagnosis of

different diseases was carried out using several diagnostic tests, such as dengue ELISA NS1, rapid test cord, malaria rapid test, blood sugar (BS) test, chikungunya rapid and ELISA test, scrub typhus rapid and ELISA test, and leptospira rapid test.

The study included both outpatient and inpatient cases, irrespective of their religion, caste, age, or gender. All relevant biochemical and microbiological tests were performed as part of the diagnostic process.

### *Study Duration*

The entire study took place from 1st July 2023 to 31st December 2023. For the purpose of analysing seasonal trends, only data collected during the peak communicable disease transmission period, which was from 1st September 2023 to 30th November 2023, was used for analysis.

### *Ethical Approval*

The research study was approved by the Institutional Ethics Committee of the institution before commencement. The study received ethical clearance from the Institutional Ethics Committee of Autonomous State Medical College, Hardoi in the year 2023.

### *Study Population*

The study included patients who visited either the outpatient departments (OPD) or the inpatient departments (IPD) and underwent diagnostic tests for certain communicable diseases during the time period covered by the study.

### *Inclusion Criteria*

The following patients were considered for inclusion in the study

- All patients of any age and both genders who visited either the OPD or the IPD.
- Patients who were suspected of having a communicable disease by their doctors and were advised to have laboratory tests.
- Patients who had complete records related to their diagnosis and treatment.

### *Exclusion Criteria*

The following patients were excluded from the study:

- Patients who did not have complete laboratory or clinical records.
- Patients who did not undergo any confirmatory diagnostic testing.
- Patients who had repeated records for the same illness episode.

### *Sampling Method*

A consecutive sampling method was followed. This means that all patients who were eligible and received diagnostic evaluation for the selected communicable diseases during the study period were included in the study.

### *Study Variables*

The following variables were recorded and analysed

- The total number of diagnostic tests conducted.
- The number of cases that were confirmed as positive by laboratory tests.
- The number of cases managed in the outpatient departments.
- The number of inpatient admissions.
- The number of patients who were discharged.
- The number of patients referred to other departments or services.
- The mortality status of the patients.

### *Diagnostic Criteria*

The diagnosis of each disease was based on laboratory investigations conducted at the hospital, which included:

- Dengue NS1 antigen tests and ELISA tests.
- Malaria rapid diagnostic tests and examination of peripheral blood smears.
- Scrub typhus rapid tests and ELISA tests.
- Chikungunya rapid tests and ELISA tests.
- Leptospira rapid tests.

### *Statistical Analysis*

All the data were entered into Microsoft Excel. The data were then analysed using descriptive statistical methods. Frequencies and percentages were calculated for various outcomes, such as the positivity rate of communicable diseases, the number of admissions, referrals, and the overall patient outcomes.

## Results

Total Patients enrolled in September 2023 were 4294. The Proportion of different communicable disease diagnoses in Sep 2023 was scrub typhus (100%), dengue -3.5%, malarial-1.4%. Most of the management of communicable diseases was done on an OPD Basis (Dengue -99.2%, Malaria-95.6%), IPD (Dengue -0.8%, Malaria- 0.4%), with only 0.4% referral of dengue. Scrub typhus was also managed exclusively at the OPD level. However, no leptospira, chikungunya, or JE tests could be done in Sep 2023 due to a few reasons. The admission rate of dengue (0.89%) was higher as compared to malaria (0.4%). The

Table 1: Management status of communicable diseases in September-2023 N=4294)

| *Sr No* | *Name of communicable disease* | *No of dx tests done* | *No of cases found positive* | *No of admissions* | *No of discharge* | *Referral* | *Death* |
|---|---|---|---|---|---|---|---|
| 1 | Dengue | 227 | 8 | 2 | 1 | 0 | 0 |
| 2 | Malaria | 4065 | 59 | 18 | 9 | 0 | 0 |
| 3 | Chikungunya | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | Scrub typhus | 2 | 2 | 0 | 0 | 0 | 0 |
| 5 | Leptospira | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | Japanese encephalitis | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 2:** Management status of communicable diseases in October-2023 (N=194,645)

| *Sr No* | *Name of communicable disease* | *No of dx tests done* | *No of cases found positive* | *No of admissions* | *No of discharge* | *Referal* | *Death* |
|---|---|---|---|---|---|---|---|
| 1 | Dengue | 46711 | 798 | 15 | 3 | 3 | 0 |
| 2 | Malaria | 147932 | 4508 | 39 | 19 | 0 | 0 |
| 3 | Chickenguniya | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | Scrub Typhus | 02 | 02 | 0 | 0 | 0 | 0 |
| 5 | Leptospira | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | Japenese Encephalitis | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 3:** Management status of communicable diseases in November-2023 (N=1988)

| *Sr No* | *Name of communicable disease* | *No of dx tests done* | *No of cases found positive* | *No of admissions* | *No of discharge* | *Referal* | *Death* |
|---|---|---|---|---|---|---|---|
| 1 | Dengue | 469 | 205 | 17 | 4 | 3 | 0 |
| 2 | Malaria | 1519 | 465 | 57 | 28 | 0 | 0 |
| 3 | Chickenguniya | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | Scrub Typhus | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | Leptospira | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | Japenese encephalitis | 0 | 0 | 0 | 0 | 0 | 0 |

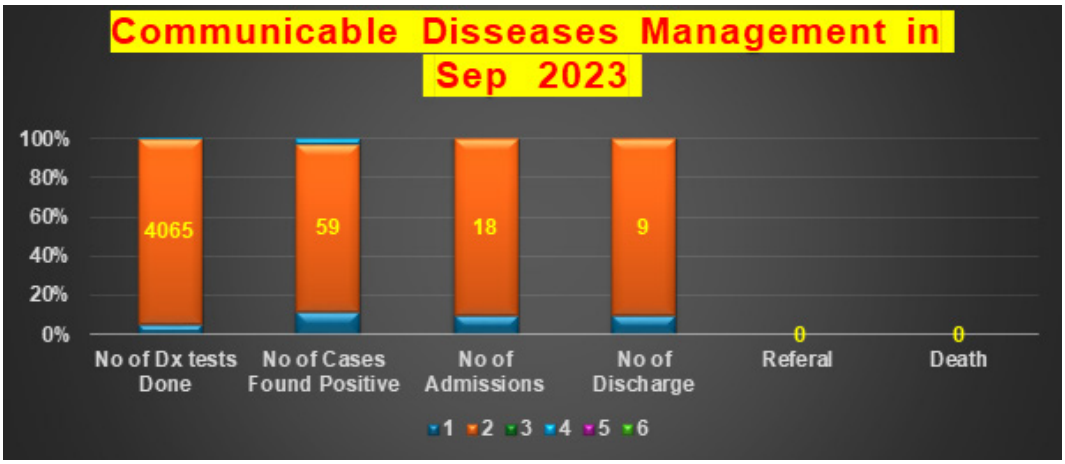


**Figure 1:** Communicable diseases management status in september 2023


**Figure 2:** Communicable diseases management status in October 2023

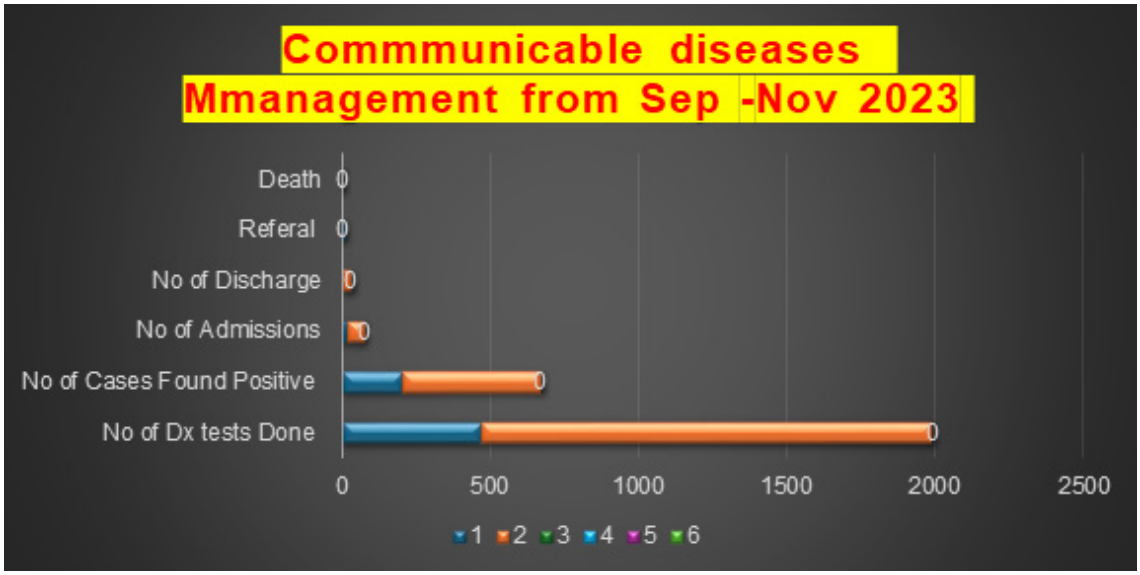


**Figure 3:** Communicable diseases management status in Sep-November 2023

discharge rate of dengue (0.4%) was higher as compared to malaria (0.2%). There was no mortality or referral from CDs in Sep 2023 (Table 1 & Figure 1).

Total patients enrolled in October 2023 were 194,645. The proportion of different communicable disease diagnoses in October 2023 was scrub typhus (100%), Dengue -1.7%, Malarial-3.0%. Most of the management of communicable diseases was done on an OPD basis (Dengue -99.97%, Malaria-99.98%), IPD (Dengue -0.03%, Malaria- 0.02%), with only 0.006% referral of dengue. Scrub typhus was also managed exclusively at the OPD level. However, no leptospira, chikungunya, or JE tests could be done in Sep 2023 due to a few reasons. The admission rate of dengue (0.03%) was higher as compared to malaria (0.02%). The discharge rate of dengue (0.006%) was higher as compared to malaria (0.01%). There was no mortality or referral from CDs in October 2023 (Table 2 & Figure 2).

Total patients enrolled in October 2023 were 1,988. The proportion of different communicable diseases diagnosis in November 2023 was dengue -43.7%, malarial-30.0%. Most of the management of communicable diseases was done on an OPD basis (Dengue -99.15%, Malaria-98.16%), IPD (Dengue -0.85%, Malaria-1.84%), with only 0.63% referral of dengue. The admission rate of dengue (3.6%) was lower as compared to malaria (3.7%). The discharge rate of dengue was 0.006%. There was no mortality or referral from CDs in NOV 2023 (Table 3 & Figure 3).

The overall diagnosis of communicable diseases in 3 months period was 100% (complete) for scrub typhus, 32% for dengue, and 31% for malaria. However, no leptospira, chikungunya, or JE cases were found in Sep-Nov 2023.

**Table 4:** Overall management status of communicable diseases from Sep-November-2023 (N=4287)

| *Sr No* | *Name of communicable disease* | *No of dx tests done* | *No of cases found positive* | *No of admissions* | *No of discharge* | *Referral* | *Death* |
|---|---|---|---|---|---|---|---|
| 1 | Dengue | 1163 | 363 | 54 | 10 | 6 | 0 |
| 2 | Malaria | 3124 | 965 | 122 | 56 | 0 | 0 |
| 3 | Chickenguniya | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | Scrub typhus | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | Leptospira | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | Japenese encephalitis | 0 | 0 | 0 | 0 | 0 | 0 |

Most of the management of communicable diseases was done on an OPD Basis (Dengue -99.15%, Malaria-98.21%), IPD (Dengue -0.85%, Malaria-1.79%), with only 0.5% referral of dengue. The discharge rate of dengue was also (0.5%). There was no mortality or referral from CDs in the month of NOV 2023 (Table 4 & Figures 3 & 4).

During the peak season for disease transmission, which spanned from September to November 2023, a total of 4,287 patients were evaluated for certain communicable diseases. A significant number of these patients were tested for malaria, with 3,124 diagnostic tests carried out, of which 965 results came back positive. This means that nearly one-third of the patients tested for malaria had the infection, which translates to a positivity rate of 30.9%.

- For dengue, 1,163 diagnostic tests were conducted, and 363 of those tests were positive, resulting in a positivity rate of 31.2%.
- This is very close to the positivity rate for malaria, indicating that both diseases were quite prevalent during the period.
- In contrast, only two cases of scrub typhus were found during the study time.
- There were no confirmed cases of leptospirosis, chikungunya, or Japanese encephalitis.

Most of the patients who were diagnosed with these diseases were treated at the outpatient level, meaning they did not require hospitalization. However, among the patients who tested positive for dengue, 54 individuals needed to be admitted to the hospital for further treatment. Similarly, 122 patients with malaria required inpatient care. Additionally, six dengue patients were referred to more specialized medical centers for their treatment. Importantly, no deaths were reported among any of the patients who were diagnosed with the communicable diseases covered in this study (refer to Table 4 for more details).

## Discussion

India is currently at a very dangerous point where there is a high risk of a sudden and severe increase in infectious diseases. Some of these diseases have come back with a vengeance, while others are waiting for the perfect chance to reappear. Uttar Pradesh, which is the biggest state in India, has a population of about 230 million people


**Figure 4:** Status of communicable diseases in peak season (Sep-Nov 2023)

(199.81 million as per the 2011 census), making it one of the most populated regions in the country. The area has a very high population density, with around 828 people living in every square kilometre. The region's unique geography and environment, along with the availability of extensive irrigation systems, create ideal conditions for the development of various disease-carrying vectors, such as mosquitoes. These vectors are responsible for spreading a wide range of diseases.

Literature shows that diseases like malaria, Japanese encephalitis (JE), and dengue are particularly prone to causing large-scale outbreaks and can lead to serious health consequences, especially if not properly managed according to the operational guidelines set by the National Vector-Borne Disease Control Programme (NVBDCP).

Malaria, in particular, is a major vector-borne disease that tends to surge during specific times of the year, such as June, September, and October. These months are marked by high humidity and warm temperatures, which are perfect for mosquito breeding, as they create plenty of stagnant water sources for the insects to lay their eggs.

In our recent study conducted in Hardoi, we observed that during a three-month period from September to November 2023, all cases of scrub typhus were diagnosed, which accounted for 100% of the cases.

Malaria and dengue were found in 31 and 32% of the cases, respectively. However, fewer cases of leptospira, chikungunya, and Japanese encephalitis were detected during the same period, due to various challenges and limitations. Our findings align with a study conducted in Bareilly, where during July and August 2018, an outbreak of malaria was reported, leading to several deaths, as documented in media reports. A detailed investigation into the outbreak revealed that the main contributing factors were excessive rainfall in the area, lack of adequate health workers for surveillance, insufficient laboratory facilities, and ineffective monitoring and delayed response. These findings closely mirror those from our current study.

In that Bareilly study, the use of bivalent antigen-based rapid diagnostic test (RDT) kits for screening people showed high levels of malaria positivity, both for *Plasmodium vivax* (P.v.) and *Plasmodium falciparum* (P.f.). However, there were no confirmed cases of fever-related deaths caused directly by malaria.

The social class and educational background of individuals were found to have a negative link with the occurrence of illness, meaning that those from higher social classes and better-educated groups tended to have lower rates of sickness. However, when it comes to gender, there was no significant impact on the level of illness observed.

In a separate study, it was noted that there was a high presence of risk factors for non-communicable diseases across all age groups in this urban slum community. This suggests that there is a strong possibility of a significant increase in the number of illnesses in the future. The study emphasized the urgent need for immediate steps to prevent and control these diseases to stop the situation from getting worse. Another study revealed that the overall sickness rate was 33.8%, with 15.5% of those affected suffering from communicable diseases. Each sick person, on average, had 1.3 diseases, of which 0.6 were communicable. The study also found that factors such as age, gender, literacy level, and occupation were related to the occurrence of illness. While the overall rate of illness was similar across different social and economic groups, there was a clear negative relationship between illness related to communicable diseases and the socioeconomic status of the individuals.

Despite these challenges, in 2023, the Uttar Pradesh government launched the 'Dastak' drive to address the issue of infectious and water-borne diseases.

A detailed action plan was created to coordinate these efforts across 12 different departments. The campaign included various activities that were to be carried out simultaneously in both urban and rural areas. Under the Communicable Disease Control Campaign, special focus was placed on maintaining cleanliness and addressing water-logging issues in both rural and urban regions. Activities aimed at raising awareness about disease prevention were conducted in schools. In addition, efforts were planned to control the spread of mosquitoes, rats, and other pests. People were also to be educated about the importance of separating animal enclosures, such as those for pigs, from human areas and maintaining cleanliness in general. As part of the Dastak campaign, medical teams conducted house-to-house visits to detect individuals suffering from infectious diseases. These teams were composed of ASHA workers and other health professionals.

In our current study, we observed that scrub typhus cases were fully managed, or 100%, during the last three months based on outpatient department (OPD) data. However, various epidemiological, entomological, and sero-surveillance studies conducted in different parts of Uttar Pradesh (UP) State have been carried out to identify local risk factors, the main vertebrate hosts, and the vector mites involved. These studies have provided

valuable insights that can help in designing appropriate interventional strategies that involve multiple non-health sectors to prevent and control scrub typhus.[15] It has been noted that the delayed hospitalization of scrub typhus (ST) cases, which often leads to multiple organ dysfunctions, is a common issue due to diagnostic uncertainties or a lack of clinical suspicion. This delay has resulted in high mortality rates among these cases, and this has been widely reported.[16,17]

In our present study, we found a higher prevalence of communicable diseases during the three-month period of scrub typhus. Scrub typhus is a well-known cause of acute encephalitis syndrome (AES) in the northern states of India. Study[18] has also highlighted scrub typhus as an emerging and treatable cause of AES in children in southern India, emphasizing the importance of routine testing for scrub typhus in diagnostic protocols. This study also suggested the potential of using IgM screening of cerebrospinal fluid (CSF) as a diagnostic tool for AES caused by scrub typhus.

However, in our current study, only a few cases of leptospira, chikungunya, and Japanese encephalitis (JE) were diagnosed over the three months from September to November 2023, due to various factors. Japanese encephalitis is an arboviral disease transmitted through mosquitoes, and it primarily affects the poor and young children under the age of 15, especially in rural areas, who are more likely to be exposed to mosquitoes that are attracted to animals. The disease pattern mostly reflects a high proportion of subclinical cases compared to the few that develop symptoms. In the absence of early treatment, the disease can be fatal in about 40% of the cases in Uttar Pradesh, often due to seizures, and one-third of the cases may result in long-term complications. Nearly half of the states in India are endemic for Japanese encephalitis. Both the Government of India and the State Government have taken the disease very seriously and have implemented all possible multi-sectoral approaches and efforts to control this public health issue. Rehabilitation centers have been set up in the affected districts to offer physiotherapy and speech therapy. Despite all these efforts, the disease has reached a plateau-like situation over the years. It is essential to have more coordinated efforts to tackle this problem effectively.[19]

Surveillance systems in hospitals play a crucial role in shaping effective policies within the health sector, helping to make informed decisions regarding health-related issues and implementing preventive measures that are suitable for the current conditions.[20] The process of gathering, revising, enhancing, monitoring, and consistently updating these surveillance systems is vital for ensuring that they function efficiently and effectively. At the same time, the support and involvement of policymakers and senior managers in the creation and execution of plans for monitoring communicable diseases, along with their commitment to reporting, is essential and forms the core of these efforts.[21] Hospitals are one of the main sources for managing the reporting of communicable diseases, as they collect reports on such diseases and forward them to health authorities. However, one of the major problems and challenges in this area is the lack of completeness and precision in the reports provided by hospitals.[21]

The findings of our study are consistent with those of many other studies.[22-29]

For instance, a study by Banerjee and Dwivedi[24] found that the prevalence of infectious diseases had slightly decreased between 2004 and 2014. However, it remains stable and continues to pose a significant challenge to public health. On the other hand, Paul and Singh[25] noted that the prevalence of infectious diseases in outpatient care increased almost threefold, from 8 to 26 per 1,000 people over a period of two decades (1995 to 2014). Additionally, typhoid fever incidence has been reported at a rate of 27.3 per 1,000 among children under 5 years, 11.7 per 1,000 among those aged 5 to 19, and 1.1 per 1,000 among individuals aged 19 to 40 in a low-income urban area of Delhi, India.[26] While there has been a decrease in dengue fever and dengue haemorrhagic fever (DHF) incidence following the 1996 outbreak in Delhi, outbreaks have been reported in Rajasthan, Tamil Nadu, Karnataka, and Gujarat in 2001.[28]

In our study, there was no recorded mortality among the patients affected by communicable diseases. This outcome might indicate that the case management and timely referral practices within the study institution are satisfactory. However, it is still important to strengthen inpatient facilities, laboratory surveillance, and diagnostic capabilities to better prepare for potential outbreaks. Identifying risk factors, addressing challenges in the delivery of primary healthcare, implementing effective intervention strategies, and enhancing the overall healthcare infrastructure are also critical needs, as highlighted in study.[13]

## Limitations of Study

The study was carried out at a single tertiary care centre, which means that the findings might not be applicable to other settings, and therefore, any generalization of the results should be approached with caution. Due to

the limited availability of data, it was not possible to perform more advanced statistical analyses. Additionally, diagnostic testing for certain communicable diseases, such as leptospirosis and Japanese encephalitis, was not comprehensive. The study depended on hospital records, and there is a possibility that these records may be affected by reporting bias, which could influence the accuracy of the findings.

## Conclusion

From our current hospital-based study, we evaluated how communicable diseases were managed during the peak transmission period at a tertiary care center in central Uttar Pradesh. The study results showed that malaria and dengue were the main causes of communicable disease burden during the time frame of the research. The high positivity rates for these two diseases suggest that vector-borne diseases continue to circulate in the region, especially during the monsoon season and the months following it. Similar patterns of seasonal rise in malaria and dengue cases have been noted in earlier studies conducted in northern parts of India.

A significant part of our findings showed that most of the cases were effectively handled at the outpatient level, with only a small number needing to be hospitalized.

This could be attributed to early detection, easy access to treatment facilities, and the efficient functioning of disease management protocols within the institution.

Only two cases of scrub typhus were found during the study period, and there were no confirmed reports of leptospirosis, chikungunya, or Japanese encephalitis.

However, it's important to note that the lack of these cases shouldn't be taken as an indication of their absence in the area. This is because the diagnostic tests for these diseases were not fully available or conducted extensively during the study period.

The results of our study emphasize the need for ongoing disease monitoring, readiness for seasonal outbreaks, active efforts to control vectors, and the improvement of tertiary healthcare systems for effective management of communicable diseases in Uttar Pradesh.

Furthermore, there is an opportunity to further develop inpatient department (IPD) management for communicable diseases in the future to better serve patients. A detailed analysis of this IPD management system for communicable diseases could also be a valuable topic for future research.

## Conflicts of Interest

None

## Funding

None

## Data Availability Statement

All data used for publishing in this study was provided by the Central Lab of Biochemistry, Microbiology & Pathology, following the necessary permissions from the Principal and the Institutional Ethics Committee (IEC) approval.

## Authors' Contributions

All the authors equally contributed to the design, execution, interpretation of the data, writing of the article, and the revision of the manuscript.

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