

OUTBREAK AND IMPACT OF HUMAN METAPNEUMOVIRUS (HMPV) IN INDIA: A CALL FOR ENHANCED SURVEILLANCE AND PREVENTIVE MEASURES**Manjeet kumar¹, Rajeev Ranjan², Rajat Saini³ and Sushil Kumar¹**¹Department of pharmacology, Haridwar university, Roorkee, 247667, India

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²Department of Pharmaceutics, ISF College of Pharmacy, Moga, Punjab 142001, India³Department of Pharmaceutical chemistry, Haridwar university Roorkee, pincode – 247667**ABSTRACT**

Human Metapneumovirus (HMPV), a respiratory virus belonging to the Paramyxoviridae family, has emerged as a growing public health concern, particularly affecting young children, elderly individuals, and immunocompromised patients. First discovered in 2001, the virus causes symptoms similar to Respiratory Syncytial Virus (RSV), such as coughing, fever, nasal congestion, sore throat, and, in severe cases, bronchitis or pneumonia. This report analyzes the recent HMPV outbreak in India during early 2025, amidst a broader global uptick in cases. India reported 59 infections with two fatalities across states including Karnataka, Gujarat, Maharashtra, and Tamil Nadu. While most infections resulted in mild to moderate respiratory symptoms, the virus poses a serious threat to vulnerable populations. Several case studies illustrate the diverse impact of HMPV on individuals across age groups and regions. The seasonal nature of HMPV, peaking during winter and early spring, underscores the importance of timely diagnosis, surveillance, and public health preparedness. Effective response strategies require coordinated efforts between healthcare institutions, government bodies, researchers, and community organizations. Preventive measures such as improved hygiene practices, public education, robust healthcare infrastructure, and anti-stigma campaigns are essential in controlling the spread and mitigating the societal impact of HMPV.

Keywords: *Human Metapneumovirus (HMPV), respiratory virus, outbreak, India, 2025, public health, Paramyxoviridae, surveillance, seasonal infection, vulnerable populations, pediatric cases, infection control, respiratory illness, virus transmission, healthcare response*

INTRODUCTION

From time-to-time different pandemics have affected the world which caused multiple deaths. The HNPV virus infected humans in 2025 at the beginning of the year and during 2024 which worried the public population. Human Metapneumovirus (HMPV) belongs to Paramyxoviridae family as a negative sense single-stranded RNA virus which shows close genetic similarity to Respiratory Syncytial Virus (RSV). The respiratory virus known as HMPV results in coughing alongside fever with blocked nose and sore throat and shortness of breath that may transform into severe illnesses such as bronchitis or pneumonia especially among small children, elderly adults and people whose immune systems are weakened [1]. The number of documented HMPV cases worldwide underwent notable changes because Malaysia recorded 327 infections in 2024 which amounted to a 45% increase compared to the 227 cases reported in the previous year. The infectious disease testing data released by Kazakhstan showed 8,360 results positive for HMPV together with 30 reported patients and the United Kingdom maintained a 4.5% population infection rate during February 5, 2025. Analysis showed a 6.2% infection rate of HMPV in China from December 2023 to December 2024 after China became the source of this virus during the current year. Across India there is a total of 59 virus cases reported. The virus demonstrates seasonal behavior because it achieves its highest numbers during the cold winter season and early spring season partially because of indoor activities along with reduced humidity and impaired immunity [2-6]

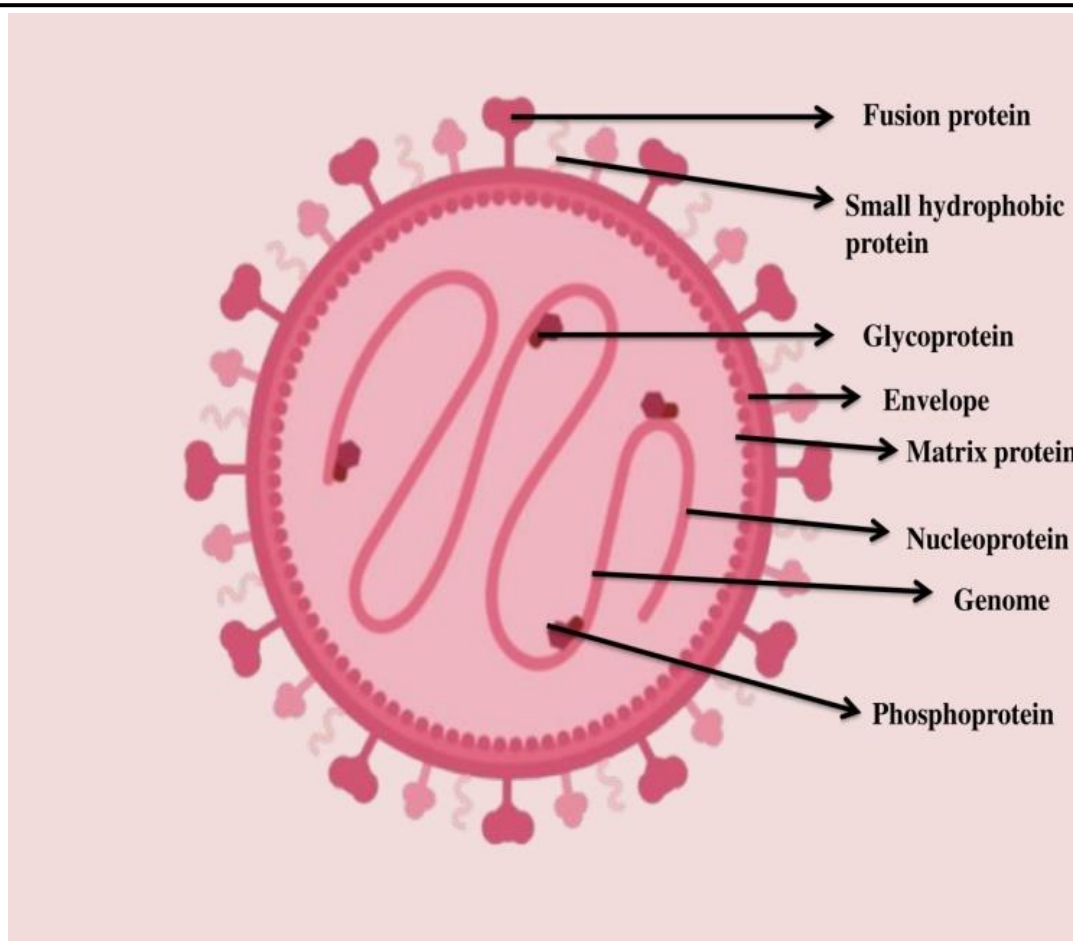


Figure 1. Indicates the Illustration of the structure of HMPV

The discovery of Human metapneumovirus by Bernadette G. van den Hoogen and her Dutch colleagues in 2001 made the Pneumoviridae family pathogen which stays closely related to the avian metapneumovirus. HMPV appeared as an offshoot of the AMPV virus between 200 to 400 years ago and now infects persons worldwide with its annual peaks occurring during late winter through spring seasons. All children get infected with the virus before reaching five years of age. Children below five years old and patients with compromised immune systems along with elderly individuals make up the main groups who get infected by this virus which presents symptoms similar to respiratory syncytial virus (RSV). The recent discovery of HMPV as a major respiratory infection pathogen prompts scientists to invest more in surveillance studies to understand this virus better and develop effective control measures [7]

The statistics from India show that Human Metapneumovirus (HMPV) has affected 59 individuals and caused two deaths among patients who had existing health conditions at the time of February 4th 2025. A total of 59 HMPV cases with two associated fatalities have been recorded in Karnataka, Gujarat, Maharashtra, and Tamil Nadu according to the figure (Fig.2) mentioned below. Health authorities clarify that HMPV infections tend to result in mild respiratory symptoms with no reason for public concern. [8]. The World Health Organization (WHO) established recommendations which include hand hygiene with other preventive steps to avoid infected persons and practice proper respiratory care. The WHO recommends that healthcare providers maintain correct surveillance methods alongside ample medical resource supplies and strict isolation procedures when assessing suspected cases [9].

CASE STUDIES

The outbreak has taken a heavy toll on the lives and livelihoods of several people in India. Here are some case studies that illustrate the plight of the people affected by the outbreak from 6th January 2025 to 29th January 2025.

Case 1

A 3-year-old child in Puducherry was admitted to the state-run Jawaharlal Institute of Postgraduate Medical Education & Research last week with fever, cough, and running nose, Health Director V Ravichandran said. She was diagnosed with HMPV on 11th January 2025. The Health Director added that she was improving and the doctors had taken all the precautions[10].

Cases 2

Dr. Dhrubajyoti Bhuyan, AMCH Superintendent informed that a 10-month-old child in Assam was admitted to AMCH on the 7th January 2025 with common cold-like symptoms. Later, sample was collected from child & sent to ICMR-RMRC in Lahowal for the testing. On 11th January 2025, testing result was out and child positive with HMPV. The child is under treatment at Assam Medical College and Hospital (AMCH) in Dibrugarh and is reportedly stable[11].

Case 3

A 59-year-old man in Gujarat Kutch district was admitted to a private hospital in Ahmedabad last week with symptoms including cold, cough, and difficulty breathing, has no travel history, and he was diagnosed with positive HMPV on the 11th of January 2025, according to the Ahmedabad Municipal Corporation. Another similar case of nine years old boy who was admitted in the same hospital with the same symptoms including cold, cough, and difficulty breathing, also he has no travel history on the 11th January 2025, according to the Ahmedabad Municipal Corporation[8].

Case 4

HMPV infection was reported in an eight-year-old boy from Gujarat's Sabarkantha district. The test for the infection was conducted at a private lab, but the samples were referred to the government lab to confirm whether the boy was suffering from the infection or not. The boy is under treatment at a private hospital in Himmatnagar town. The boy was found positive for HMPV on the 6th January 2025. The case was reported on the 10th January 2025[8].

Case 5

A four-year-old boy tested positive for HMPV in Ahmedabad's Krishnanagar. On January 13th, the boy showed fever, vomiting and cough symptoms and was admitted to Zydus Hospital. A test for HMPV detected the infection. No travel history for the child has been received yet. Now the boy was under treatment at Krishna Nagar Hospital, Ahmedabad[8].

Case 6

Human Metapneumovirus (HMPV) cases in Karnataka reached two by January 15th 2025. Routine monitoring carried out by the Indian Council of Medical Research (ICMR) at Bengaluru Baptist Hospital detected the reported Metapneumovirus conditions. The initial patient consisted of a 3-month-old female baby while the second patient was an 8-month-old male suffering from bronchopneumonia before making a full recovery[12].

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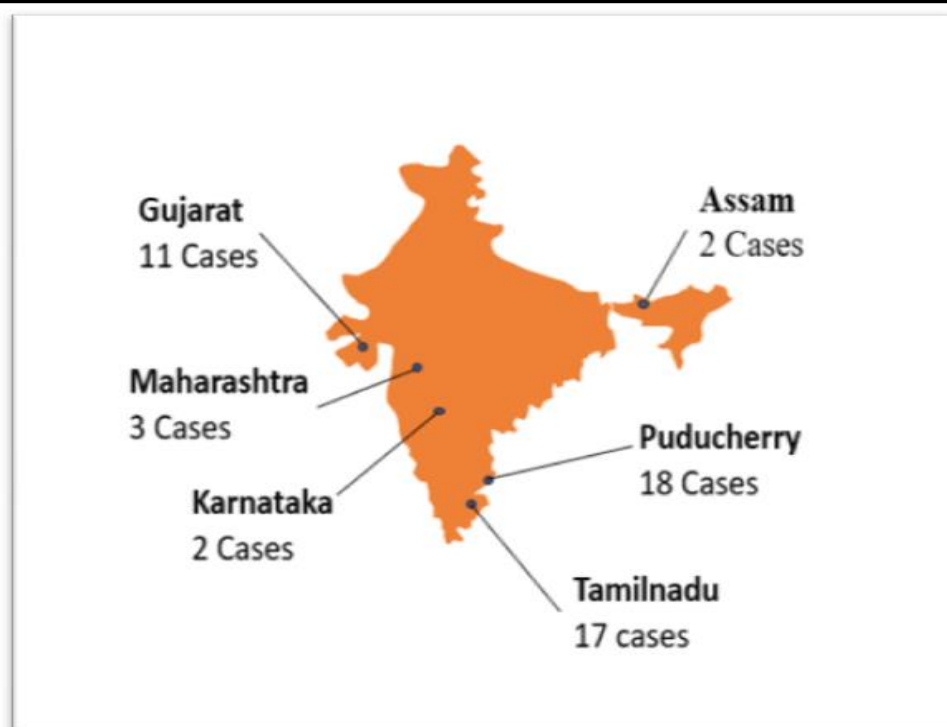


Figure 2. Cases of HMPV

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AUTHOR'S INSIGHT ON THE TOPIC

The outbreak of Human Metapneumovirus (HMPV) in India confirms the necessity for immediate action to stop and prevent and care for this illness. Solutions must arise from the partnership between governmental organizations along with healthcare personnel alongside media outlets and civil institutions and individual citizens. Enhanced activities should cover the development of surveillance and laboratory infrastructure alongside infection control practices and expanded healthcare access as well as public education along with anti-stigma measures for authentic prevention and management information related to HMPV identification and treatment.

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