SHORT COMMUNICATION

Resurgence of Mumps in India: A Call to Reintroduce MMR into the Immunization Program

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ABSTRACT

The recent rise in mumps outbreaks across several Indian states exposes a critical gap in the national immunization framework specifically, the absence of mumps vaccination in the Universal Immunization Programme (UIP). As mumps is currently excluded from the India's Universal Immunization Program and only the MR vaccine is administered, millions of children remain susceptible to this vaccine-preventable disease. In accordance with World Health Organization (WHO) and Indian Academy of Paediatrics (IAP) guidelines, this communication urges policymakers to reintroduce the MMR vaccine into India's Universal Immunization Programme (UIP).

Key words: Mumps, Resurgence, Immunization, India, Programme

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Introduction

Mumps is a viral infection caused by a paramyxovirus and is often underestimated as a mild illness of childhood and adults.[1] The virus primarily spreads through respiratory droplets from infected individuals, with an incubation period ranging from 12 to 25 days.[2-4] Clinically, it typically manifests as painful swelling of one or both parotid glands and may be preceded by nonspecific symptoms such as fever, headache, fatigue, and loss of appetite.[3] Serious complications can occur, including orchitis, oophoritis, mastitis, aseptic meningitis, encephalitis, and sensorineural hearing loss, especially in adolescents and adults.[2,5] Mumps is preventable with two doses of the MMR vaccine, which is widely administered in many high- and middle-income countries.[6]

Current epidemiology

India is witnessing an alarming resurgence of mumps, a disease once believed to be under control, in recent years. Insufficient data from various regions of the nation understate the true magnitude of the disease burden.[7] Recent outbreaks in Kerala, Tamil Nadu, Puducherry, and Maharashtra have raised public health concerns. Tamil Nadu recorded a rise in incidence from 0.07 per lakh in 2021–22 to 1.30 in 2023–24, totalling 1,091 cases. In Navi Mumbai, 217 cases were reported between December 2023 and February 2024 and over 90% of affected children were unvaccinated. Kerala saw a dramatic surge from 2,324 cases in 2023 to over 70,000 in 2024.[8-10]

Surveillance gaps

Although mumps is a vaccine-preventable childhood disease, it is not a notifiable condition under India's Integrated Disease Surveillance Program (IDSP) via the Integrated Health Information Portal (IHIP). Only under the generic "other diseases" category can health services record suspected, probable, or laboratory-confirmed cases or deaths.[11] This absence of regular monitoring causes under-detection and public health response delays. Many instances, particularly those with subclinical presentation or moderate symptoms, are likely to go undetected. This surveillance gap contributes to recurring outbreaks and hides the actual population disease load. A study by Narmatha K et al. found a consistent rise in mumps incidence over the years, with a notable spike in 2024.[12] This trend bolsters the case for designating mumps as a notifiable disease in states such as Tamil Nadu, Puducherry to enhance monitoring and carry out prompt control actions. The present resurgence is not only an epidemiological footnote; it is a symptom of a larger gap in India's immunization strategy: the Measles-Mumps-Rubella (MMR) vaccination's absence from the Universal Immunisation Programme (UIP).[13]

Policy background

Among the largest public health initiatives worldwide, India's Universal Immunization Program has made significant strides in reducing child mortality and controlling vaccine-preventable diseases.[14] State governments previously implemented the MMR vaccine through selective initiatives, rather than including it in the central Universal Immunization Programme (UIP). For instance, Delhi introduced a single dose of MMR at 15–18 months in 1999, and states like Kerala briefly replaced the 16–24-month MR booster with MMR. However, these were localized efforts. In a strategic policy shift, the Government of India later introduced the bivalent Measles-Rubella (MR) vaccine nationally administered at 9 months and again at 16–24 months thereby excluding mumps from routine immunization across the country.[11,15] The main reasons cited for excluding mumps were its perceived low public health priority, limited published data on community burden, and the higher cost of the MMR vaccine.[11] While financially rationalized, this exclusion inadvertently created a significant immunity gap, particularly in vulnerable populations.[16]

Equity and access

Despite the availability of MMR vaccine in India's private healthcare system, its lack from the UIP restricts access for socioeconomically disadvantaged populations, especially in rural and underserved regions.[8] This disparity undermines the principles of equity and universality upon which the Universal Immunization Programme was founded, as families in lower-income settings are often unaware of or unable to afford private-sector MMR, effectively excluding them from comprehensive protection. As recently observed, this selective coverage compromises herd immunity and promotes localised outbreaks. Furthermore, the COVID-19 epidemic has thrown regular immunization programs off track, increasing immunity gaps and contributing to the re-emergence of previously controlled diseases.[16]

Data from the Indian Academy of Paediatrics (IAP) and multiple surveillance reports support the efficacy and safety of MMR. The IAP recommends the administration of MMR at 9 months, 15 months, and 4–6 years of age.[17] Studies also suggest that inclusion of mumps vaccination significantly reduces outbreaks and associated complications. The current epidemiological trends make a compelling case for transitioning from MR to MMR within the national programme.[18]

Addressing cost and vaccine overload concerns

Concerns around cost and vaccine overload are valid but addressable. The MMR vaccine offers protection

against three diseases in a single shot, thus not increasing the number of injections. While MMR is slightly more expensive than MR, studies show that it is a cost-saving strategy in the long run. For example, a mumps outbreak investigation in Odisha found the average treatment cost per case was ₹1,030, totalling over ₹34,000 for 34 cases, while the cost of one MMR dose was only ₹76.5. The authors emphasized the economic and preventive value of vaccination, particularly in tribal communities.[19] Additionally, a large-scale US-based economic evaluation by Zhou et al. estimated that routine childhood immunization programs, including MMR, resulted in over 86% reduction in costs associated with vaccine-preventable diseases. These findings support the inclusion of MMR as a financially prudent and health-protective public policy.[20]

Regional and global best practices

Countries with comparable health system structures and economic conditions such as Sri Lanka, Bhutan, and Bangladesh provide strong examples of MMR integration into public immunization programs. Sri Lanka's National Immunization Programme administers MMR in two doses, at 12 months and 3 years, as part of its routine schedule, contributing to significant control over mumps outbreaks (Ministry of Health, Sri Lanka, 2023). Bhutan's EPI manual also includes MMR, aligning with WHO guidelines for comprehensive vaccine coverage (MoH Bhutan, 2025). Although Bangladesh currently provides the MR vaccine, policy discussions are underway for MMR integration, recognizing its broader protective scope (DGHS Bangladesh, 2024). These examples reinforce the operational feasibility and public health value of transitioning from MR to MMR in India's UIP.[21-23]

Conclusion

Reintroducing MMR into the UIP would be a calculated way to bolster India's public health defence against vaccine-preventable diseases. It is not only urgent but also feasible, as demonstrated by successful implementation in countries with similar healthcare infrastructures. Beyond protecting against mumps, it would also improve measles and rubella control by boosting overall vaccine coverage and reinforcing public trust in the immunization system. This triple benefit aligns well with India's elimination goals for measles and rubella under the National Strategic Plan. To make this shift sustainable, investments in cold chain logistics, training, and community engagement are essential. Strengthened disease surveillance will also play a key role in monitoring outcomes and guiding policy.

India possesses the technological, logistical, and programmatic capacity to expand its vaccination coverage. The moment is now for public health stakeholders, immunization specialists, and policy-makers to re-evaluate present policies and prioritize the inclusion of MMR in the UIP. Failure to act now risks normalizing the periodic resurgence of a disease that is both preventable and controllable.

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