www.ijarp.com ISSN 2456-9992 Page: 01-11

International Journal Advanced Research Publications

Review Article

Volume: 02
Issue: 07

DISEASE ERADICATION PROGRAMMES IN INDIA: CURRENT STATUS, CHALLENGES, AND FUTURE PERSPECTIVES

***Tapan Kumar Mahato**

Ranchi College of Pharmacy, Namkum, Ranchi, Jharkhand, India.

Article Received: 04 June 2026, Article Revised: 24 June 2026, Published on: 14 July 2026

***Corresponding Author: Tapan Kumar Mahato**

Ranchi College of Pharmacy, Namkum, Ranchi, Jharkhand, India.

Doi: https://doi-doi.org/101555/ijarp.9229

ABSTRACT

Disease eradication and elimination programmes are critical components of public health strategies in India. Over the past decades, India has implemented several national programmes targeting communicable diseases such as polio, tuberculosis, malaria, leprosy, and lymphatic filariasis. Significant achievements include the successful eradication of polio and elimination of diseases such as yaws and maternal and neonatal tetanus. However, diseases like tuberculosis and malaria continue to pose major challenges due to socio-economic factors, population density, and emerging drug resistance. National initiatives such as the National Tuberculosis Elimination Programme (NTEP) and the National Vector Borne Disease Control Programme (NVBDCP) have contributed to substantial progress, yet gaps in implementation, awareness, and healthcare accessibility persist. This short communication provides an overview of major disease eradication programmes in India, their current status, achievements, and challenges, along with future strategies to strengthen public health outcomes. This study highlights the need for integrated digital and policy-driven approaches to accelerate disease eradication in India.

KEYWORDS: Disease eradication, Public health programmes, Tuberculosis elimination, Vector-borne diseases, Digital health, Disease elimination.

1. INTRODUCTION

1.1 Background and public health importance: India has implemented several national disease control, elimination, and eradication programmes to reduce morbidity and mortality associated with communicable diseases. These initiatives are led by the Ministry of Health and Family Welfare (MoHFW) and supported by global organizations such as the World

Health Organization. Such programmes play a critical role in strengthening public health systems, improving disease surveillance, and enhancing access to preventive and curative healthcare services [1,2].

1.2 Concepts of disease control, elimination, and eradication: Understanding the distinction between disease control, elimination, and eradication is essential for evaluating public health programmes. Disease control refers to reducing disease incidence or prevalence to acceptable levels; elimination refers to reducing disease incidence to zero within a defined geographic region; while eradication refers to the permanent reduction of disease incidence to zero worldwide [3,4]. These concepts guide the planning and implementation of national health strategies.

1.3 Evolution of disease eradication programmes in India: India's disease eradication programmes have evolved from vertical, disease-specific initiatives to integrated public health strategies. Early programmes such as the National Malaria Control Programme (1953) laid the foundation for future efforts. Over time, India has achieved significant milestones, including eradication of poliomyelitis and elimination of maternal and neonatal tetanus, while continuing efforts are underway for tuberculosis, malaria, and lymphatic filariasis [5,2].

1.4 Need for disease eradication programmes: The high burden of infectious diseases in India, along with socio-economic disparities, population density, and environmental factors, necessitates strong disease eradication programmes. These initiatives help reduce disease transmission, prevent outbreaks, improve quality of life, and strengthen healthcare infrastructure while contributing to national and global health targets [7,8].

Table 1: Key public health concepts in disease management. Source: Adapted from. [7,3]

Term	Definition	Objective
Control	Reduction of disease burden to acceptable levels	Manage disease impact
Elimination	Zero incidence in a specific region	Interrupt regional transmission
Eradication	Zero incidence globally	Permanent removal of disease

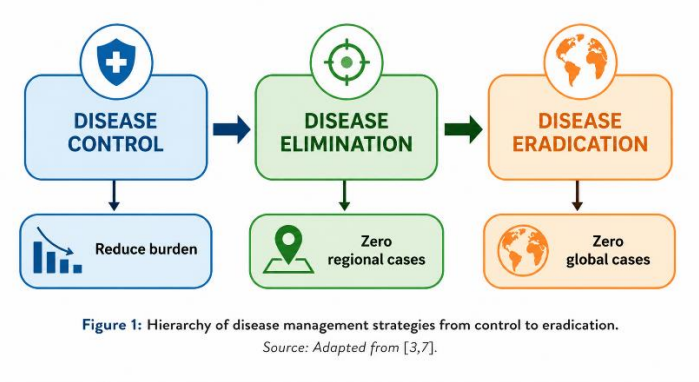

Figure 1: Hierarchy of disease management strategies from control to eradication.
Source: Adapted from [3,7].

2. Major disease eradication/elimination programmes in India: India has implemented several national programmes targeting communicable diseases with the aim of achieving control, elimination, or eradication. These programmes are coordinated by the Ministry of Health and Family Welfare and supported by global agencies such as the World Health Organization. Over the years, India has achieved significant success in eradicating and eliminating certain diseases, while others remain under active control and elimination phases [1,2].

2.1 Key national programmes and their status

Table 2: Major disease eradication/elimination programmes in India. Source: Adapted from. [2,7,1]

Programme	Target disease	Current status
National Polio Eradication Programme	Poliomyelitis	Eradicated (India polio-free since 2014)
Pulse Polio Programme	Poliomyelitis	Successfully implemented
National Leprosy Eradication Programme (NLEP)	Leprosy	Eliminated as a public health problem (prevalence <1/10,000)
National Tuberculosis Elimination Programme (NTEP)	Tuberculosis	Target: Elimination by 2025
National Vector Borne Disease Control Programme (NVBDCP)	Malaria, Dengue, Chikungunya	Ongoing control programme
National Viral Hepatitis Control Programme	Hepatitis B & C	Ongoing
National Programme for Elimination of Lymphatic Filariasis	Filariasis	Near elimination

2.2 Polio eradication programme: India's success in polio eradication is considered one of the greatest achievements in global public health. Through sustained immunization campaigns under the Pulse Polio Programme, India was declared polio-free in 2014 by the

WHO [5,6]. This success was driven by mass vaccination, strong surveillance systems, and community participation.

2.3 Leprosy elimination programme: The National Leprosy Eradication Programme (NLEP) has significantly reduced disease prevalence in India. Leprosy was officially eliminated as a public health problem in 2005; however, new cases continue to be reported, indicating the need for sustained surveillance and early detection [2].

2.4 Tuberculosis elimination efforts: India carries the highest global burden of tuberculosis (TB). The National Tuberculosis Elimination Programme (NTEP) aims to eliminate TB by 2025, five years ahead of the global target. Despite improvements in diagnosis and treatment, challenges such as multidrug-resistant TB (MDR-TB), poor treatment adherence, and socio-economic factors continue to hinder progress [8].

2.5 Vector-borne disease control: The National Vector Borne Disease Control Programme (NVBDCP) targets diseases such as malaria, dengue, and chikungunya. Although India has witnessed a decline in malaria cases over the years, vector-borne diseases remain a significant public health concern due to climatic factors, urbanization, and vector resistance [1].

2.6 Viral hepatitis and filariasis control: The National Viral Hepatitis Control Programme focuses on prevention, screening, and treatment of hepatitis B and C infections. Similarly, the National Programme for Elimination of Lymphatic Filariasis has achieved substantial progress through mass drug administration (MDA) campaigns, with India nearing elimination targets [2].

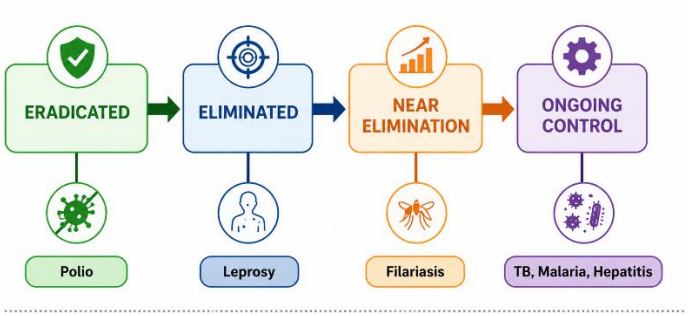

Figure 2: Current status spectrum of major disease eradication and control programmes in India.
Source: Adapted from [2,7,1].

2.7 Overall progress and public health impact: India's disease eradication programmes have contributed significantly to reducing disease burden, improving life expectancy, and strengthening healthcare infrastructure. However, challenges such as population density, healthcare access disparities, emerging drug resistance, and socio-economic factors continue

to affect programme outcomes. Continuous monitoring, technological integration, and community participation remain essential for achieving future eradication goals [1,2].

3. Achievements of disease eradication programmes in India: India has achieved remarkable success in the control, elimination, and eradication of several communicable diseases through sustained public health interventions, strong policy implementation, and community participation. These achievements highlight the effectiveness of coordinated national programmes supported by global agencies such as the World Health Organization [1,2].

3.1 Polio eradication: One of the most significant public health achievements in India is the eradication of poliomyelitis. Through extensive immunization campaigns under the Pulse Polio Programme, India achieved high vaccination coverage even in remote and high-risk populations. As a result, India was declared polio-free in 2014, marking a major milestone in global health [5,6]. This success demonstrated the importance of strong surveillance systems, political commitment, and community engagement.

3.2 Elimination of maternal and neonatal tetanus: India successfully eliminated maternal and neonatal tetanus (MNT) as a public health problem in 2015. This achievement was primarily driven by improved immunization coverage among pregnant women, safe delivery practices, and enhanced maternal healthcare services. The elimination of MNT reflects the effectiveness of integrated maternal and child health programmes [9].

3.3 Reduction in leprosy prevalence: The National Leprosy Eradication Programme has significantly reduced the prevalence of leprosy in India. The introduction of multidrug therapy (MDT) and early detection strategies enabled India to achieve elimination as a public health problem in 2005, defined as a prevalence of less than 1 case per 10,000 population. However, the continued occurrence of new cases highlights the need for sustained surveillance and awareness [2].

3.4 Decline in malaria and filariasis burden: India has made substantial progress in reducing the burden of vector-borne diseases such as malaria and lymphatic filariasis. Malaria incidence and mortality have declined significantly over the past decade due to improved vector control measures, early diagnosis, and treatment strategies. Similarly, the National Programme for Elimination of Lymphatic Filariasis has achieved considerable success through mass drug administration (MDA) campaigns, bringing the country closer to elimination targets [1].

Table 3: Major public health achievements in disease control in India. Source: Adapted from. [1,6,8,2,7]

Disease	Achievement	Year/Status
Poliomyelitis	Eradicated (polio-free certification)	2014
Maternal & Neonatal Tetanus	Eliminated	2015
Leprosy	Eliminated as public health problem	2005
Malaria	Significant reduction in cases	Ongoing decline
Filariasis	Near elimination	Ongoing

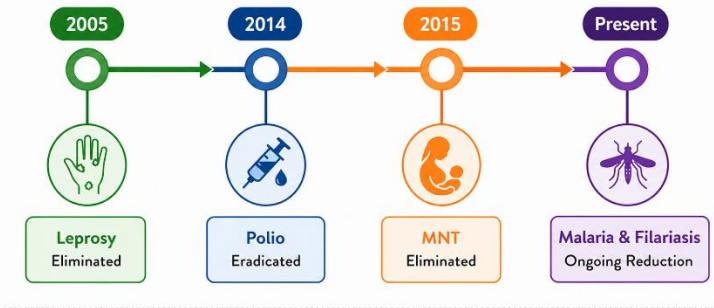

Figure 3: Timeline highlighting major milestones in disease eradication and elimination programmes in India.
Source: Adapted from [1,6,8,2].

3.5 Overall impact: These achievements have significantly reduced disease burden, improved population health, and strengthened India's healthcare system. They also demonstrate the importance of sustained public health efforts, community participation, and international collaboration. However, maintaining these achievements requires continuous surveillance, policy support, and adaptation to emerging health challenges [1].

4. Current challenges in disease eradication programmes in India: Despite notable achievements, India continues to face multiple challenges in achieving complete eradication and elimination of communicable diseases. These challenges are multifactorial, involving epidemiological, socio-economic, environmental, and healthcare system-related factors [1,2].

4.1 High burden of tuberculosis: Tuberculosis (TB) remains one of the most significant public health challenges in India, which accounts for a substantial proportion of global TB cases. The emergence of multidrug-resistant tuberculosis (MDR-TB) further complicates control efforts due to longer treatment duration, higher costs, and lower treatment success rates. Factors such as poverty, malnutrition, overcrowding, and poor adherence to treatment contribute to the persistence of TB [8,1].

4.2 Antimicrobial resistance (AMR): Antimicrobial resistance is a growing global health threat that significantly undermines disease control programmes. In India, irrational use of

antibiotics, including self-medication and over-the-counter availability of prescription drugs, accelerates the development of resistance. AMR leads to treatment failure, increased healthcare costs, and higher mortality rates, posing a major challenge to public health systems [1,9].

4.3 Urbanization and population density: Rapid urbanization and high population density in India create favorable conditions for the transmission of infectious diseases. Overcrowded living conditions, especially in urban slums, facilitate the spread of airborne and vector-borne diseases such as tuberculosis and dengue. Migration and unplanned urban growth further complicate disease surveillance and control efforts [1].

4.4 Poor sanitation and lack of awareness: Inadequate sanitation, unsafe drinking water, and low levels of health awareness contribute significantly to the spread of communicable diseases. Poor hygiene practices increase the risk of infections such as diarrheal diseases, hepatitis, and parasitic infections. Lack of awareness regarding preventive measures, vaccination, and early treatment further limits the effectiveness of eradication programmes [2].

4.5 Healthcare accessibility gaps in rural areas: Limited access to healthcare facilities in rural and remote areas remains a major barrier to disease control. Shortage of trained healthcare professionals, inadequate infrastructure, and delayed diagnosis contribute to disease progression and transmission. Additionally, reliance on informal healthcare providers and traditional practices often leads to inappropriate treatment and delayed medical intervention [4].

Table 4: Key challenges affecting disease eradication programmes in India. Source: Adapted from. [1,9,2]

Challenge	Impact on Public Health
Tuberculosis (including MDR-TB)	High morbidity and mortality
Antimicrobial resistance	Treatment failure and increased costs
Urbanization & population density	Increased disease transmission
Poor sanitation & awareness	Spread of infections
Healthcare accessibility gaps	Delayed diagnosis and treatment

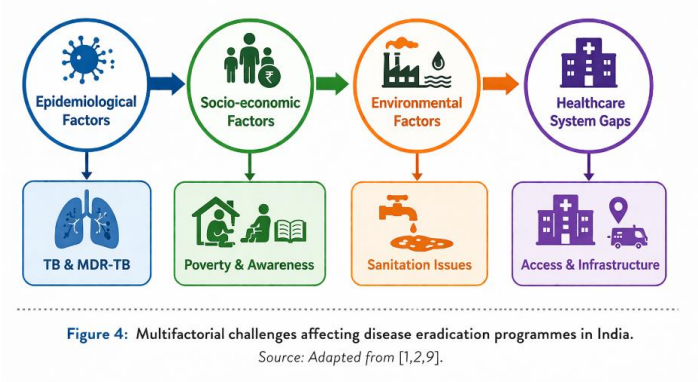

Figure 4: Multifactorial challenges affecting disease eradication programmes in India.
Source: Adapted from [1,2,9].

4.6 Overall perspective: These challenges highlight the complexity of achieving disease eradication in a diverse and populous country like India. Addressing these issues requires a comprehensive approach involving policy strengthening, improved healthcare infrastructure, public awareness, and integration of modern technologies such as digital health systems [1].

5. Future strategies for disease eradication in India: Achieving and sustaining disease elimination and eradication in India will require a coordinated, multi-sectoral approach that strengthens health systems, leverages digital technologies, and enhances community participation. The following strategies are critical to accelerate progress and address persistent gaps [1,2].

5.1 Strengthening primary healthcare (PHCs): Robust primary healthcare is the backbone of disease control. Strengthening Primary Health Centres (PHCs) and Health and Wellness Centres can improve early diagnosis, timely treatment, and continuity of care. Expanding trained workforce capacity, ensuring uninterrupted supply of essential medicines and diagnostics, and integrating vertical programmes at the primary level are key priorities [10,12].

5.2 Digital health surveillance systems: Real-time, integrated surveillance systems enable early outbreak detection and rapid response. India's digital health initiatives (e.g., integrated disease surveillance, electronic case-based reporting) can be scaled to improve data quality, timeliness, and interoperability. Use of dashboards, geospatial mapping, and mobile reporting can strengthen monitoring and decision-making [1].

5.3 Community awareness and vaccination programmes: Sustained community engagement is essential for prevention and adherence. Targeted health education, school-based programmes, and mass media campaigns can improve awareness of hygiene, vaccination, and early care-seeking. High-coverage immunization campaigns remain central to preventing vaccine-preventable diseases and sustaining elimination gains [6].

5.4 Public–private partnerships (PPP): Engaging the private sector can expand reach, improve service delivery, and enhance case detection, particularly for diseases like tuberculosis where a significant proportion of patients seek private care. PPP models can support diagnostics, treatment adherence, reporting, and supply chains when aligned with national standards [7].

5.5 Focus on AI and data-driven disease monitoring: Artificial intelligence (AI) and data analytics can transform disease surveillance and control. AI-enabled tools can support early outbreak prediction, risk stratification, image-based diagnostics, and optimized resource allocation. However, robust validation, data governance, and integration with public health systems are essential to ensure safety and effectiveness [12,14,13].

Table 5: Strategic priorities for strengthening disease eradication efforts. Source: Adapted from [1,10,11]

Strategy	Key actions	Expected impact
Strengthen PHCs	Workforce, diagnostics, essential medicines, integration	Early detection and continuity of care
Digital surveillance	Real-time reporting, dashboards, GIS mapping	Rapid outbreak detection and response
Community awareness & vaccination	IEC campaigns, school programmes, outreach	Improved prevention and uptake
Public–private partnerships	Private sector engagement, standardized reporting	Expanded coverage and case detection
AI & data-driven monitoring	Predictive analytics, decision support, automation	Efficient resource use and timely interventions

Figure 5: Integrated, multi-sectoral framework to accelerate disease eradication in India.
Source: Adapted from [12,1, 10,11].

5.6 Implementation considerations: Successful implementation requires policy coherence, sustainable financing, workforce training, and strong governance. Interoperable data systems, privacy safeguards, and continuous programme evaluation are essential to maintain gains and adapt to emerging threats [1].

6. CONCLUSION

India has made remarkable progress in disease control, elimination, and eradication through sustained public health efforts, with the successful eradication of poliomyelitis standing as a landmark achievement in global health. Similarly, the elimination of maternal and neonatal tetanus and significant reductions in leprosy, malaria, and filariasis burden highlight the effectiveness of coordinated national programmes and community participation. Despite these achievements, several infectious diseases, particularly tuberculosis and vector-borne diseases, continue to pose major challenges due to factors such as antimicrobial resistance, population density, socio-economic disparities, and healthcare accessibility gaps. These challenges underscore the need for sustained and adaptive strategies to maintain and accelerate progress. Strengthening healthcare infrastructure, especially at the primary care level, improving disease surveillance systems, and ensuring equitable access to healthcare services are essential to sustain progress. Furthermore, the integration of modern technologies such as digital health systems, artificial intelligence, and data-driven monitoring can enhance early detection, improve decision-making, and optimize resource allocation. In conclusion, while India has achieved significant milestones in disease eradication, a comprehensive and integrated approach combining policy strengthening, community engagement, technological innovation, and continuous monitoring is crucial to achieve future eradication targets and ensure long-term public health sustainability.

ACKNOWLEDGEMENT

The author gratefully acknowledges the contributions of the researchers, authors, and organizations whose published work has been cited in this manuscript and has significantly supported the development of this article. The author also acknowledges the use of artificial intelligence tools for assistance in language refinement, structuring, and formatting of the manuscript.

REFERENCES

1. World Health Organization. (2023). *Global health observatory data repository*. World Health Organization.
2. Ministry of Health and Family Welfare. (2022). *National health profile of India 2022*. Central Bureau of Health Intelligence.
3. Dowdle, W. R. (1998). The principles of disease elimination and eradication. *Bulletin of the World Health Organization, 76*(Suppl 2), 22–25.

4. World Health Organization. (2019). *WHO guideline on self-care interventions for health and well-being*. World Health Organization.
5. World Health Organization. (2014). *India polio-free*. World Health Organization.
6. World Health Organization. (2020). *Polio eradication strategy 2020–2023*. World Health Organization.
7. World Health Organization. (2020). *Immunization agenda 2030: A global strategy to leave no one behind*. World Health Organization.
8. Government of India. (2023). *India TB report 2023*. Central TB Division, Ministry of Health and Family Welfare.
9. World Health Organization. (2016). *Validation of maternal and neonatal tetanus elimination*. World Health Organization.
10. Indian Council of Medical Research. (2022). *Antimicrobial resistance research and surveillance network (AMRSN) annual report*. ICMR.
11. National Health Mission. (2022). *Indian public health standards (IPHS): Health and wellness centre—primary health centre (PHC) guidelines 2022*. Ministry of Health and Family Welfare.
12. World Health Organization. (2021). *Ethics and governance of artificial intelligence for health*. World Health Organization.
13. World Health Organization. (2018). *Primary health care: Transforming vision into action*. World Health Organization.
14. Bates, D. W., Levine, D. M., Syrowatka, A., Kuznetsova, M., Craig, K. J. T., Rui, A., Jackson, G. P., & Rhee, K. (2021). The potential of artificial intelligence to improve patient safety: A scoping review. *npj Digital Medicine, 4*, 54. https://doi.org/10.1038/s41746-021-00423-6