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Journal homepage: <https://www.ijfcm.org/>**Review Article****Challenges of sustaining leprosy elimination in India and prospects of eradication: Current status & way forwards**Imran Ahmed Khan¹, MD, Abu Bashar^{2*}¹BRD Medical College, Gorakhpur, Uttar Pradesh, India²All India Institute of Medical Sciences, Gorakhpur, Uttar Pradesh, India**ARTICLE INFO***Article history:*

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*Keywords:*Leprosy
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Leprosy Elimination in India has been a public health priority for decades and on December 31, 2005, India achieved the World Health Organization's (WHO) goal of eliminating leprosy as a public health problem at the national level, with the prevalence rate falling below one case per 10,000 population. Despite this, India still accounts for the highest number of new leprosy cases globally, contributing more than 50 percent of the leprosy burden of the world. The country has made considerable progress in reducing the burden of leprosy over the years but challenges remain in maintaining the elimination status and preventing disabilities due to leprosy. The present review discusses the current status of leprosy in India, identifies challenges/lacunae in the implementation of the leprosy eradication program, and suggests potential steps that could be undertaken for sustained elimination of leprosy and future possible eradication of the disease from the country.

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For reprints contact: reprint@ipinnovative.com**1. Introduction**

Leprosy or Hansen's disease is amongst the oldest disease known to mankind.¹ It is a chronic infectious, Neglected Tropical Disease (NTD) caused by *Mycobacterium leprae*.² Leprosy can affect all ages, from infancy to old age. It mainly affects the skin, mucosa (particularly upper respiratory tract), eyes and peripheral nerves.³ Initial manifestation of Leprosy is light-coloured patches on the skin with loss of sensation. Untreated cases may develop advanced disease including varying degrees of paralysis and deformity in muscles of hands, feet, face, and eyes. Later on, ulcers on the sole of the feet and even blindness may ensue.^{4,5} The good news is that Leprosy is curable and aggressive treatment in the early stage prevents disability. Early diagnosis carries some inherent advantages including the complete cure of the disease before further

nerve damage occurs and preventing disabilities, avoiding infecting close contacts, and it also motivates people to seek treatment early. Patients with Leprosy can continue to work and lead a productive life during and after treatment.

2. Leprosy Situation in India and the Control Initiatives

Despite significant progress in combating the disease, leprosy remains a public health concern in many parts of the world, including India which accounts for a significant proportion of the global leprosy burden. India, Brazil, and Indonesia were the countries where the highest number of new cases of Leprosy were reported in 2019.⁶ A point prevalence of less than 1 case per 10,000 population is regarded as leprosy elimination status when it ceases to be a public health problem.⁷ Most of the countries achieved this target by the year 2000, but still sporadic cases continue to occur.⁸ Though, India was declared "Leprosy Eliminated"

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in 2005, it still harbours over half (52%) of the world's new leprosy cases.⁹ Experts are of the opinion that more cases are being reported as a result of to the Government's efforts of India through initiatives like LCDC (Leprosy Case Detection Campaign) and SLAC (SPARSH Leprosy Awareness Campaign) rather than the actual increase of cases.^{10,11}

Leprosy is endemic in several states and union territories of India, with the annual case detection rate of 4.56 per 10000 populations. Chhattisgarh (state) and Dadra and Nagar Haveli (Union Territory) has not achieved elimination status yet. In the year 2020-21, the prevalence of leprosy was 0.4 per 10,000 population in India wherein 58.1% were multibacillary in which 39% were women, 5.8% were children less than 14 years of age, and 2.41% had visible deformities representing the advanced stage of Leprosy. The rate of visible deformities was 1.1 per million populations. During 2020-2021, despite COVID-19 disruption of health services, 65147 new cases of leprosy were identified, diagnosed and provided free treatment.¹² Maharashtra recorded the most incidents—17,014—up till January 2023. Bihar came in second with 11,318 cases, followed by Uttar Pradesh (10,312), Chhattisgarh (7,422), Madhya Pradesh (7,313), Jharkhand (6,184), Odisha (6,088), and West Bengal (5,012).¹³

Presently, 54 NGOs are getting grant-in-aid from Government of India under SET (Survey Education and Treatment) scheme.¹⁴ Resolution 29/5 has been adopted by India as of the Human Rights Council of the United Nations as adopted on 2nd July 2015 titled: "Elimination of discrimination against persons affected by leprosy and their family members". WHO shifted Global Leprosy Programme office with its staff to New Delhi, India from Geneva on 1st July 2005.¹⁵

The NLCP (National Leprosy Control Programme) started in 1955 as a centrally aided program to achieve Leprosy control through early diagnosis and Dapsone monotherapy. In 1982 MDT (Multi Drug Therapy) was recommended with the aim of Leprosy eradication by 2000 AD and it was renamed NLEP (National Leprosy Eradication Programme) in 1983. The program has been integrated with the general health care system since 2002-03 making Leprosy diagnostic and treatment services available at all Primary Health centres (PHCs) and Government hospitals. Technical support is provided through a team of trained medical officers and paramedical staff at the district called District Leprosy Cell.¹⁶ The International Leprosy Summit in 2013 in Bangkok, Thailand, reaffirmed political commitment towards leprosy where representatives from the high leprosy endemic countries signed the "Bangkok Declaration".¹⁷ The Nippon Foundation has committed to the allocation of increased funding for leprosy activities to support countries to honour that commitment.¹⁸ Case detection and treatment with MDT alone have proven

insufficient to interrupt the transmission.¹⁹ Leprosy Post Exposure Prophylaxis (LPEP) was launched globally by various leprosy stakeholders and agencies in the year 2014.²⁰ Some recent studies have also shown that chemoprophylaxis with single dose rifampicin (SDR) leads to considerable overall risk reduction in preventing Leprosy for household contacts.²¹

In an effort to combat leprosy, NLEP introduced the Mycobacterium Indicus Prani (MiP) vaccine in a project mode in India during 2016. MiP vaccine has been found to have sufficient immunotherapeutic and immunoprophylactic effects in multibacillary leprosy patients and their contacts in both hospital and population-based trials.²² ASHA-based surveillance for leprosy suspects (ABSULS) was launched on July 1st 2019²³ and The Disability Prevention and Medical Rehabilitation (DPMR) are being carried out at all three levels of health care, say Primary, Secondary, and Tertiary level care.²⁴ After detailed consultations with countries, experts, and attendants of persons affected by leprosy, WHO released the towards zero leprosy: global leprosy strategy 2021–2030 aligned to the neglected tropical diseases road map 2021–2030. The Strategy asks for a "vision of zero leprosy" that includes the elimination of leprosy (defined as the cessation of transmission) as well as the removal of infection, sickness, disability, stigma, and prejudice. The four pillars of the Strategy includes: implementing integrated, country-owned zero leprosy road maps in all endemic countries; scaling up leprosy prevention alongside integrated active case detection; managing leprosy and its complications and prevent new disability; and combating stigma and ensuring human rights to be respected. With the aim of enhancing knowledge and skills of health workers at all levels related to diagnosis, treatment of leprosy, and management of disabilities WHO has also developed e-learning modules which can be accessed at the Open WHO platform.²⁵

During an event to observe National Anti-Leprosy Day themed "Let us fight Leprosy and make Leprosy a history" in New Delhi, India, National Strategic Plan & Roadmap for Leprosy (2023-27) and National Guidelines for Antimicrobial resistance (AMR) Surveillance in leprosy were released on 30th January 2023 (In India, World Leprosy Day is celebrated on 30 January, the anniversary of Mahatma Gandhi's death).²⁶ Under the NLEP, the Nikusth 2.0, an integrated portal for leprosy case management, was also launched. It is supposed to aid in efficient data recording, analyzing, and reporting the data in the form of indicators and a real-time dashboard at centre, state, and district levels.¹² With political will, societal support, synergy and intersectoral coordination, the country is aiming to achieve the eradication target titled "Leprosy Mukht Bharat" implying zero new cases by 2027, three years ahead of the SDG.²⁷

3. Sustaining Leprosy Elimination and Prospects of Eradication

Leprosy mainly affects people in resource-limited countries, especially those who live in overcrowded conditions. Many of them have poor access to basic healthcare needs and unable to bear the high costs of consulting to the private doctors. Few of them need to travel a long distance to reach healthcare providers and clinics for the management of their ailments. Because of these adversities, many of them fail to complete treatment or don't receive it at all, in spite of the free treatment program supported by the WHO. Due to the continued stigma against people suffering from Leprosy they may not seek help during the initial stage of the disease, causing delays in diagnosis and seeking healthcare in their advanced stage with disabilities. Many Leprosy patients are unable to work because of the disease's incapacity or because of the stigma that keeps them away from finding employment.²⁸ Women affected by leprosy face additional issue of gender and social discrimination, which may also be responsible for the late diagnosis. In some countries, a person is even allowed to legally divorce her spouse because of the disease.²⁹ Unfortunately, this may leave many women lonely, homeless, and unable to care for themselves and for their children. Early identification and successful completion of treatment are still hampered by the stigma associated with leprosy and prejudice against those who have the condition. There is some evidence that the leprosy bacillus may be maintained as a silent transient infection in nasal cavities in endemic areas.^{30,31} Dealing with cross border issue is also an important factor because the risk and persistence of communicable diseases are considerable due to the poor availability of healthcare facilities.³²

4. Conclusion

India's journey toward leprosy elimination and its sustenance has witnessed substantial progress, but challenges persist. Combating the disease requires a comprehensive approach which encompasses strengthening of the healthcare systems, raising awareness, combating stigma, and fostering community involvement. Enhancing the capacity of healthcare facilities, particularly in underserved areas, is crucial for ensuring early detection, diagnosis, and treatment of leprosy. This includes investing in training healthcare professionals, improving diagnostic capabilities, and ensuring the availability of essential drugs. New tools utilizing e-learning and telemedicine, use of Artificial Intelligence (AI) wherever relevant and available should be applied. Strengthening disease surveillance systems is vital in identifying leprosy cases promptly. Integration of leprosy surveillance with existing primary healthcare systems can facilitate early detection and timely referrals for diagnosis and treatment. Continued investment in research and innovation can lead to improved diagnostic

tools, better treatment options, and the development of effective preventive measures. Collaborative efforts between academia, industry, and government bodies can accelerate progress towards leprosy eradication. Comprehensive awareness campaigns, education programs, and community engagement initiatives are essential to dispel myths, reduce prejudice, and foster inclusivity. With renewed commitment, targeted interventions, and sustained collaboration, India can overcome the challenges and pave the way for a leprosy-free future.

5. Source of Funding

Nil.

6. Conflict of Interest


Nil.


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