

Bodies, Boundaries, and Bureaucracies: The History of Leprosy and Public Health Governance in Kerala

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Abstract

This article follows the extensive and intricate history of leprosy (Hansen's disease) from its ancient origins across the globe to its contemporary management within Kerala's public health apparatus. Using archaeological, textual, clinical, and administrative evidence, it examines how understandings, therapies, and policy responses to leprosy have changed across different periods and regions. The study begins by situating leprosy in global palaeopathological and cultural contexts, analysing how societies such as those in India, Egypt, and Greece perceived and responded to the disease. It then turns to indigenous Indian medical frameworks and colonial-era legal and institutional reactions, culminating in the innovative measures taken by the princely state of Travancore—most notably the foundation of the Nooranad Leprosy Sanatorium. The article also traces Kerala's post-independence trajectory, emphasising targeted elimination initiatives like the Aswamedham campaign, the ELSA programme, and SLAC awareness drives. By embedding Kerala's leprosy control efforts in a wider historical and socio-political context, the paper illustrates how institutional memory, cultural responsiveness, and decentralized governance have fostered a more inclusive model of disease control. The study highlights the persistent problems of stigma, social exclusion, and delayed diagnosis despite clinical advances, and advocates continued, compassionate, community-driven strategies for leprosy elimination.

Keywords: Leprosy, Hansen's disease, Kerala, Travancore, Nooranad Sanatorium, public health, stigma, National Leprosy Eradication Programme (NLEP), Aswamedham, ELSA, SLAC, medical history, social exclusion, institutional care.

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I. Global Dimensions of Leprosy

Leprosy, medically termed Hansen's disease, is among the earliest documented human ailments. Skeletal remains exhibiting its signs have been dated to around 2000 BCE, with one of the earliest examples identified in the Indian subcontinent. Such paleopathological depth places leprosy among the ancient zoonoses that accompanied human migrations, social formations, and ecological adaptations. Nonetheless, despite its deep antiquity, leprosy persists today as an extant disease that intersects pathology, culture, religion, and public health.

The causative agent of leprosy is *Mycobacterium leprae*, an acid-fast, rod-shaped bacillus characterized by a notably slow rate of replication. The organism principally affects the skin and peripheral nerves, producing hallmarks such as hypopigmented, anaesthetic skin patches, motor weakness, and visible deformities. The conspicuous physical effects of untreated disease contributed historically to its association with spiritual impurity and divine retribution. Unlike many infectious conditions, leprosy unfolds slowly—symptoms may take years to manifest—complicating early diagnosis and allowing social responses to overshadow the biological agent.

In antiquity, leprosy was described in culturally specific vocabularies. Indian, Egyptian, Chinese, and Mesopotamian texts contain references to ailments whose symptom profiles closely align with modern descriptions of leprosy. The *Sushruta Samhita* in India classifies skin disorders under the collective term “kushtha,” with “Maha Kushtha” likely corresponding to what is now identified as leprosy. Egyptian papyri such as the Ebers and Brugsch documents mention conditions affecting Nubian slaves that may represent leprosy. Chinese medical classics—including the *Nei Ching* attributed to the Yellow Emperor and the writings of Hua Tuo—describe nodular lesions, ulcers, and sensory loss consistent with Hansen's disease.

In the Greco-Roman medical tradition, physicians developed nuanced taxonomies of chronic ailments that encompassed conditions resembling leprosy, sometimes labelled “elephantiasis graecorum.” Aretaeus of Cappadocia, in the first century CE, provided one of the earliest systematic clinical accounts, noting the disfiguring course of the illness, its modes of spread, and possible remedies. Later medical authorities—Galen,

Oribasius, and Paul of Aegina—further elaborated these accounts, blending Hippocratic observation with contemporary pharmacological measures.

Within Judeo-Christian thought, leprosy acquired moral and social valence. Old Testament references to “zaraath,” rendered as “lepra” in the Septuagint and later as “leprosy,” profoundly shaped perceptions of the disease as an emblem of divine displeasure and ritual contamination. Medieval Europe institutionalized these moral associations through leper colonies (lazarettos) and rites that effectively symbolized the social “death” of sufferers, removing them from civic life. By the thirteenth century, Europe hosted over 19,000 such institutions, and afflicted individuals often wore distinctive garments and carried bells to signal their presence.

The decline of leprosy in Europe between the fourteenth and seventeenth centuries has provoked varied explanations. Some historians credit improvements in nutrition, hygiene, and general living standards; others suggest that the rise of tuberculosis, another mycobacterial infection, may have conferred partial cross-immunity. However, the reduction of leprosy was uneven and incomplete. With the intensification of colonial expansion and global trade, European actors both intervened medically and acted as vectors for microbial spread. Leprosy, alongside other infections, travelled with settlers, soldiers, and enslaved peoples into the Americas and the Pacific, reshaping local epidemiologies and institutional responses.

The modern scientific study of leprosy crystallized in the nineteenth century. A landmark event was Gerhard Armauer Hansen’s identification of *Mycobacterium leprae* in 1873, making leprosy one of the first diseases linked to a specific bacterial agent under microscopic observation. This discovery undermined prevailing hereditary and miasmatic explanations for the disease. Yet, despite bacteriological progress, social stigma persisted, necessitating interventions that were medical, cultural, and administrative—especially within colonial settings where disease narratives were entangled with race, caste, and governance anxieties.

India and the Cultural-Epidemiological Landscape of Leprosy

India’s engagement with leprosy spans millennia and is entangled with religion, caste, social ostracism, and evolving medical ideas. Long before colonial biomedical frameworks arrived, Indian traditions maintained extensive—at times symbolic—knowledge of skin conditions, including forms analogous to leprosy. Classical Ayurvedic texts such as the *Sushruta Samhita* and *Charaka Samhita* employ the term “kushtha” for diverse dermatoses; scholars often interpret “Maha Kushtha” or “Arun-Kushtha” as references to Hansen’s disease.

Ayurvedic treatises documented symptoms—red or discolored patches, limb deformities, sensory loss, and ulceration—and explained causation through the tridoshic theory, attributing disease to imbalances in vata, pitta, and kapha. Therapeutic regimens included the use of chaulmoogra oil (locally known as Tuvarka taila) derived from *Hydnocarpus kurzii*, administered topically and orally. This indigenous remedy later entered early modern therapeutic practices for leprosy until sulfone drugs superseded it mid-century.

Religious and legal texts influenced social responses to the disease. Works such as the *Manusmriti* and the *Atharva Veda* framed leprosy within moral and legal categories, at times representing it as punishment for past transgressions or ritual impurity. Consequently, affected individuals, regardless of infectivity, often faced exclusion. The disease’s social meaning was intensified within the caste system, where leprosy became a marker of social degradation and untouchability.

Throughout India’s history, responses oscillated between charity and confinement. Religious orders and temple institutions sometimes provided care, but the colonial era witnessed an expansion of segregationist and punitive responses. British colonial authorities, viewing leprosy through humanitarian and administrative lenses, increasingly institutionalized isolation as a form of disease control.

A pivotal legal development was the Leprosy Act of 1898, which formalized the confinement of persons affected by the disease. The statute authorized the forcible segregation of patients in asylums, many of which were established in cooperation with Christian missionary organizations. Although presented as a public health measure, the act was also shaped by contemporary preoccupations with racial hygiene, degeneracy, and imperial governance.

The early twentieth century brought expanded research and control activities. The colonial administration, together with missionary and philanthropic actors, conducted surveys, operated clinics, and supported treatment trials. Notable among these interventions was the use of chaulmoogra oil injections—painful and variably effective—until sulfone-based chemotherapies emerged in the mid-1900s.

After independence, India inherited both the epidemiological burden and colonial administrative frameworks. The central government launched the National Leprosy Control Programme (NLCP) in 1955, initially relying on Dapsone monotherapy; subsequent emergence of drug resistance necessitated a strategic pivot. In 1982, the World Health Organization recommended Multidrug Therapy (MDT) comprising Dapsone, Rifampicin, and Clofazimine, a recommendation India adopted and which led to renaming the national effort as the National Leprosy Eradication Programme (NLEP) in 1983.

Despite measurable gains—including India’s declaration of leprosy elimination as a public health problem in 2005 (operationalized as fewer than 1 case per 10,000 population)—the disease persists in specific

socio-geographic pockets: tribal regions, urban slums, and migration corridors, where limited healthcare access, enduring stigma, and delayed diagnosis impede eradication.

India's fight against leprosy has thus remained as much a social endeavor as a medical one—an attempt to undo centuries of marginalization, institutional neglect, and cultural stigma. Within this national tableau, Travancore's early, organized responses to leprosy provide a salient case study that both paralleled and anticipated broader Indian trends.

Leprosy and Public Health in Travancore: Institutionalization and Social Response

The princely state of Travancore, on India's southwestern coast, represented a distinct political and cultural entity that pursued state-led social development prior to independence. Though modest in size relative to British provinces, Travancore earned a reputation for progressive policies, administrative competence, and innovations in public health. It is within this milieu that the state's approach to leprosy must be understood—an approach that both foreshadowed national reforms and reflected local intersections of caste, medicine, and governance.

Leprosy was present in Travancore's social fabric. The 1921 government census listed 193 cases in Trivandrum Taluk, but a thorough survey in 1929 overseen by Dr. I. Santra revised that figure to 839 cases—nearly sixteen times higher than the official count. This disparity starkly revealed the gulf between reported statistics and the disease's hidden burden, especially among marginalized groups subject to stigma, seclusion, and restricted healthcare access.

The 1929 survey uncovered multiple layers of complexity. Prevalence varied by region and caste: the coastal belt registered the highest incidence (61 cases per 100,000) compared with 35 per 100,000 in the hill regions. Investigators attributed this heterogeneity to environmental and socio-economic determinants—poor soil fertility, nutritional deficits, hookworm infection, and restricted access to vegetables and dairy—as well as widespread deprivation. Dietary assessments of inmates at the Oolampara Leprosy Asylum showed chronic nutritional shortfalls: among 203 patients, only 17 had consumed ghee, 26 had taken milk, and 42 had eaten vegetables, while most subsisted on rice, tapioca, dry fish, and coconut.

Caste-based differentials exacerbated vulnerability: marginalized communities such as the Pulayas and Pariahs bore disproportionate burdens, their overcrowded, unsanitary housing and social segregation delaying diagnosis and facilitating transmission. Yet leprosy also affected municipal workers, domestic servants, clergy, and prisoners—indicating that while infection crossed caste boundaries, its social consequences remained stratified. Examinations of 3,101 students outside Trivandrum municipality found a 1.25% prevalence, and Dr. Kamalamma's surveys discovered an additional 80 cases in girls' schools within the municipal area.

In response to these findings, Travancore embarked on an ambitious public health project: the construction of a purpose-built leprosy sanatorium at Nooranad. For more than fifty years prior, leprosy patients had been housed at the Trivandrum Leprosy Hospital, but urban expansion and intensifying stigma rendered the facility unsuitable for retention in the capital. In August 1934 patients were relocated to temporary structures at Nooranad in central Travancore, and soon thereafter the government began erecting a permanent colony across 140 acres.

The Nooranad Leprosy Sanatorium was notable for its scale and layout. Near completion, the complex comprised:

- Forty general wards (thirty for men and ten for women), each holding 12 beds;
- Two observation wards to monitor asymptomatic patients before discharge;
- A jail ward of ten single-occupancy cells for criminal cases;
- A hospital block with 36 beds for critically ill patients.

The administrative core housed outpatient services, surgical theatres, laboratories, and a dispensary. The colony was fitted with electric power, piped and filtered water, and modern sanitation systems including septic tanks, flushing toilets, and twin incinerators for waste disposal. A cremation shed with high chimneys addressed hygienic disposal of the deceased and mitigated social unease.

Nooranad was not merely an instrument of confinement. Residents were encouraged to engage in productive and cultural pursuits as part of rehabilitation and social reintegration. Amenities included:

- A weaving shed producing garments for internal use;
- A laundry unit;
- Shops, schools, and a reading room with newspapers donated by local publishers;
- Separate worship spaces for Hindus, Christians, and Muslims;
- Recreational facilities for football, volleyball, drama, and traditional dance.

Daily routines sought to ameliorate the psychological harms of isolation: patients prepared their own meals, grew vegetables, manufactured footwear, and took part in communal singing. Women gained social

agency through cultural programming, and children of affected persons attended gender-segregated schools taught by former patients. These activities aimed at rehabilitation rather than mere diversion.

Clinical management at Nooranad followed established regimens. Patients received derivatives of *Hydnocarpus* oil by subcutaneous or intramuscular routes; leprous lesions were treated with trichloroacetic acid; and selected cases received intradermal ethyl esters of the oil. In the institution's first year, staff administered 21,920 injections and performed 402 minor operations. Inpatient cure rates were modest—14 patients discharged as cured—but outpatient services showed greater efficacy, with 97 cases cured and 21 relapses on follow-up.

The financial investment was substantial. Travancore expended Rs. 16,000 on temporary structures and over Rs. 3,32,000 on permanent works, including land acquisition. The calculated monthly cost of maintaining a patient stood at Rs. 41, encompassing food, medical care, clothing, and maintenance—an expenditure that signaled the state's serious commitment to addressing leprosy as both a public health and moral responsibility.

Travancore's policy represented a significant inflection in Indian public health. At a time when many jurisdictions responded to leprosy with neglect or punitive incarceration, Travancore implemented a programme of structured segregation combined with preventive and rehabilitative services. Although the sanatorium did not eradicate the disease in the region, it established a replicable institutional model that influenced subsequent policies in Kerala and beyond.

Continuity and Change: Leprosy and Public Health Administration in Post-Travancore Kerala

State reorganization in 1956 united Travancore and Cochin to form Kerala, which inherited the institutional edifices of the princely era along with the continuing burden of endemic diseases such as leprosy. While Travancore's political identity dissolved, its public health commitments persisted and evolved under Kerala's governance. This continuity is most apparent in the integration of leprosy management into the general health system and in the state's alignment with national eradication programmes.

Although India declared leprosy eliminated as a public health problem in 2005 (fewer than 1 case per 10,000 population), Kerala continued to register sporadic incidence, including a relatively high proportion of multibacillary and pediatric cases compared with national averages. Persistent transmission in tribal communities, coastal settlements, and among migrant laborers from highly endemic states such as Bihar, West Bengal, and Assam demanded context-sensitive interventions beyond routine surveillance.

Kerala's response under the National Leprosy Eradication Programme (NLEP) emphasized four pillars: early case detection, universal coverage with multidrug therapy (MDT), disability prevention and rehabilitation, and community education to counter stigma. Health personnel across tiers—medical officers, ASHA and Anganwadi workers, and tribal promoters—were mobilized and trained to recognize cases early and to engage communities.

A landmark post-2005 initiative was the Aswamedham Campaign launched in October 2016. Framed to accelerate progress toward Sustainable Development Goals on leprosy by 2030, Aswamedham prioritized mass case detection in tribal and underserved pockets. Targets included reducing prevalence below 0.1 per 10,000 at block and panchayat levels, halving pediatric case incidence, and achieving zero disability among new child cases. The campaign institutionalized house-to-house visits, school screenings, and contact tracing, with frontline workers incentivized to report suspected cases.

During 2020–21, even as public health resources were diverted to COVID-19 containment, Kerala implemented three distinct anti-leprosy initiatives. Aswamedham 3.0, under the national Active Case Detection and Regular Surveillance (ACD & RS) framework, deployed volunteers to screen entire populations over six months—executed with pandemic precautions—and combined community education with referral mechanisms, demonstrating the state's adaptive capacity.

The ELSA (Eradication of Leprosy through Self Reporting and Awareness) programme shifted emphasis toward digital and community-based surveillance. Recognizing constraints on physical outreach during lockdowns, ELSA leveraged information technology and the eSanjeevani telemedicine platform to facilitate self-assessment and timely clinical consultation. Media-driven sensitization sustained detection efforts during mobility restrictions and suggested a participatory model of epidemiology.

Concurrently, the Sparsh Leprosy Awareness Campaign (SLAC), anchored to Anti-Leprosy Day on 30 January 2021, aimed to dismantle stigma through Panchayat-level pledges, street theatre, testimonies by cured persons, and public education. Q&A sessions, dissemination of IEC materials, and screening films at local meetings illustrated Kerala's rights-based, people-centered approach.

Nevertheless, structural hurdles remain. Data from 2013–2018 showed stable prevalence levels and a notable share of new cases presenting with Grade 2 disabilities, signaling delays in detection. School screenings in 2016–17 and 2017–18 uncovered worrying numbers of pediatric cases, indicating ongoing transmission in specific localities. The high frequency of multibacillary disease stressed the need to intensify surveillance among vulnerable groups.

Thus Kerala presents a paradox: it combines a decentralized, technologically capable public health system with persistent epidemiological and social challenges that complicate full eradication. Yet the state's commitment to targeted case-based strategies, local awareness generation, and disability management reflects an empathetic, evolved model of disease control that builds on Travancore's institutional inheritance while adding the capacities of a post-independence welfare state.

Revisiting Leprosy's Legacy: Memory, Institutions, and Health Policy Transitions

Kerala's management of leprosy is the product of layered historical processes shaped by scientific advances, shifting political regimes, and enduring social burdens. Where leprosy was once framed primarily in moral and religious terms, it gradually entered scientific and administrative arenas through bacteriological discovery and public health programming. Despite clinical progress, social exclusion has persisted, exposing a gap between biomedical advances and public perception.

Travancore's contribution was formative. Its decision to address leprosy via planned institutional care—epitomized by the relocation of patients to the Nooranad Sanatorium in 1934—was both progressive and pragmatic. The colony's design integrated medical, educational, and occupational elements; supported by royal patronage and medical proponents such as Dr. Archibald Ramsay and informed by empirical surveys like Dr. I. Santra's 1929 study, Nooranad represented an early attempt to reconcile segregation with structured social support.

The creation of Kerala did not abandon this legacy but reframed it within a modern, decentralized, rights-oriented health architecture. The state's implementation of national programmes such as the NLEP was augmented with context-specific initiatives—Aswamedham, ELSA, and SLAC—that combined household screening, school surveillance, and digital self-reporting to foster participatory and stigma-aware interventions.

Yet the continued emergence of multibacillary cases, pediatric infections, and advanced deformities highlights persistent inequities. These epidemiological patterns reflect deeper social determinants—tribal marginalization, urban poverty, and migratory vulnerability—that biomedical interventions alone struggle to redress. Kerala's celebrated public health model must continually adapt to these complex socio-epidemiological terrains.

In sum, the history of leprosy in Kerala is a narrative of both continuity and change. From the institutional discipline of the Nooranad colony to interactive digital outreach, the state's evolving response illustrates how past structures inform present strategies. The broader lesson is clear: public health is not solely the elimination of pathogens but the cultivation of ethical, inclusive, and responsive systems of care.

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