

## History of Health Amenities and Disease Deterrence in India

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### Abstract

Numerous infectious diseases, many of which are still common in third-world nations, have a history that dates back to the colonial era and the avoidance of such diseases. It demonstrates the evolution of monitoring systems and the imperial government's response to epidemics. It describes how British India's efforts to enhance its residents' health were affected by the construction of health systems throughout the colonial era. With a special emphasis on health, this paper outlines the public health system in the nation and charts the development of the main health initiatives and programs. India's health profile at the end of the 20th century seems to be improving. The nation's observed epidemiological and demographic change can be largely attributed to remarkable advancements in people's socioeconomic, nutritional, and health status, as well as the effective eradication, elimination, and control of key killer diseases. Whether it is via state-run health services or health insurance, universal coverage of the people through some form of health plan is firmly ingrained in history. No industrialised nation, whether communist or capitalist, has not provided a minimal level of healthcare for its citizens by using one of the methods above alone or in combination. Socialist nations guarantee citizens' basic rights to health care and other "social services" by the state. Health care is a key component of social security, which has developed in capitalist nations under the idea of a welfare state. However, underdeveloped nations like India have not yet seen the emergence of such guaranteed universal coverage of health care in a satisfactory manner.

**Key words :** health programs, epidemiological transition, vital statistics, epidemics, prevention of diseases.

India is currently undergoing a period of demographic and epidemiological transformation. Even though there have been national programs for the control of most infectious

illnesses for almost 50 years, these diseases continue to pose a serious threat to public health. Medical care is merely one aspect of health care and is necessary whenever there is a deviation from health, such as when an ailment or disease is prevalent<sup>6</sup>. “Health services” generally only offer curative medical care, which is often of low quality and unsatisfactory for the ill patients that visit the hospital or health centre<sup>16</sup>.

The Government of India created the Health Survey and Development Committee (Bhore Committee) in 1946 to examine the nation’s current healthcare system and offer suggestions for advancements. The Committee examined public health, medical aid, professional education, medical research, and international health when it published its findings in 1946<sup>26</sup>. This article describes the public health system in the country and shows the evolution of the major health initiatives and programs, with a focus on health.

#### *Formation of Medical Services :*

Lord Cornwallis, the Governor General of India, commanded in 1788 that medical officers could not enter the civil service unless they had served two years in the army. Throughout the remainder of the British administration, not much changed in this regard<sup>19</sup>. Calcutta Medical College opened its doors in 1835, allowing Indian citizens trained there to work as assistant civil surgeons in subdivisional public hospitals or the Subordinate Military Medical Services. The finest among them were small-time civil surgeons. Between 1890 and 1900, five Native Americans joined the Indian Health Services<sup>17</sup>.

Madras General Hospital opened its doors in 1679<sup>24</sup> and was India’s first hospital. A nationwide network of hospitals was subsequently established in India. The Indian government consented to provide supplies of medications and equipment to the expanding chain of small medical facilities and clinics in 1854. There are now Government Store Depots at Calcutta, Madras, Bombay, Mian Mir, and Rangoon<sup>17</sup>.

The initial step towards establishing India’s first medical laboratory was taken in 1884. A central laboratory was set up close to Simla in Kasauli<sup>17</sup>. The Indian Pasteur Institute for the treatment of people bitten by rabid animals was established in Kasauli in 1900, and subsequently, similar facilities were established throughout the nation<sup>17</sup>.

To provide funding for research projects, the Indian Research Fund Association was established in 1911. In 1918, a Nutrition Research Laboratory was established in Coonoor<sup>26</sup>. In 1918, Lady Reading Health School was founded in Delhi. Calcutta hosted the founding of the All-India Institute of Hygiene and Public Health in 1930. The first Rural Health Training Centre was founded in Singur, close to Calcutta, in 1939<sup>26</sup>.

About 1200 public hospitals and dispensaries were under the jurisdiction of the Indian Imperial government in 1880; by 1902, that number had increased to about 25,000. In 1902, one hospital was located for every 330 square miles. In 1880, public health institutions earned 3.6 million rupees, and by 1902, their revenue had increased to almost 8.1 million rupees. 7.4 million patients were added or lost

between 1880 and 1902; this number rose to almost 22 million<sup>17</sup>.

In 1880 and 1881, around 0.7 million rupees were set aside for vaccination costs. Between 1902 and 1903, that amount increased to almost 1.1 million rupees<sup>17</sup>. The Act for Birth and Death Registration was passed in 1873. The preservation of vital statistics, or the registration of births and deaths, fell within the purview of sanitary and vaccination personnel. Both the first all-India census and the first Indian Factories Act were passed in 1881. Commissions, committees, and special officials were constituted to control epidemics<sup>26</sup>. With the passage of the Drugs Act in 1940, drugs came under official supervision for the first time<sup>18</sup>.

#### *Disease Control and Prevention :*

Morbidity, mortality, and disability have historically been used to quantify the burden of disease. Various metrics have been implemented globally to evaluate the state of health and the prevalence of diseases. Insufficient, precise, and suitable statistical data have frequently resulted in overestimations in certain cases and underestimates in others. Moreover, the absence of consistency in evaluations has created significant challenges in conducting worldwide analyses of health requirements and disease burden, as well as in organising and executing economical and successful intervention strategies for illness prevention and control and health promotion.

#### *Cholera :*

The Western world was aware that cholera might be fatal by the 1830s. Due to its

severe effects on the Company's commanders and soldiers, it attracted the attention of medical professionals in India; before, it was thought to be a sickness that only affected the impoverished. The primary focus at the time was on cholera prevention because there was no viable therapy available<sup>25</sup>. Sanitary Commissioner for Central Provinces and Berar, Dr S.C. Townsend, reported on his findings into the cholera pandemic of 1868<sup>27</sup>.

Dr. James L. Bryden conducted substantial research on cholera during the 1860s and 1870s. He was the government's principal expert on epidemic cholera and the first epidemiologist in India. He worked as a statistical officer in IMS in Bengal and experienced cholera firsthand. However, cholera was regarded as an airborne illness that was most likely dispersed by an organism resembling a seed. According to his report, tainted water does not spread cholera. In opposition, A.C. DeRenzy, Punjab's Sanitary Commissioner, said that it would negatively impact India's ongoing efforts to prevent the spread of cholera<sup>13</sup>.

John Murray, the Inspector General of Civil Hospitals in Bengal and the Northwestern Provinces, carried out in-depth research on cholera. Murray provided helpful treatment suggestions for cholera around that time, even though he thought that environmental variables preceded cholera attacks despite the presence of contagiousness<sup>24</sup>.

Periodicals detailing cholera epidemics in India between 1862 and 1881, as well as reports from the United Provinces' Commissioner Benarus Division regarding illness outbreaks

in the Bulliah subdivision and Mirzapore area<sup>13</sup>. The frequency of cholera epidemics has decreased over time. In 1950, there were 176,307 recorded cases of cholera and 86,997 fatalities<sup>16</sup>.

#### *Malaria :*

Even now, malaria remains a threat to public health. In-depth studies of mosquitoes in Punjabi military cantonments were carried out in 1900 by Christophers, Stephens, and James. Under Christophers' direction, the All-India Malaria Conferences (1900–1909) and the Punjab Malaria Surveys (1909–1911) were conducted<sup>25</sup>.

Captain S.P. James studied the causes and treatments of malarial fevers from 1903 to 1908. He produced insightful studies for medical professionals regarding the prevention and treatment of malaria<sup>22</sup>.

The Central Malaria Bureau was established in Kasauli in 1909 to conduct research and control malaria<sup>25</sup>. Bently recommended improving drainage systems and eliminating mosquitoes successfully to combat malaria<sup>4</sup>. Maj reached similar findings. J.L. Marjoribanks, Deputy Sanitary Commissioner for Western Registration Districts, in 1913 after studying malaria in the Islands of Salsette<sup>22</sup>. There were 17.15 deaths per 1000 cases of malaria in 1913, 27.613/1000 cases in 1915, 14.73 cases in 1916, and 66.56 cases per million cases in 1918<sup>14</sup>.

Studies on mosquitoes, which are the carriers of malaria, were also conducted. Following Stephens and Christophers in 1900,

significant studies on mosquitoes included Maj. McGilchrist's 1912–1913 *Stegomyia* survey, M.O.T. Iyengar's 1913 Survey of Malaria and Environs in Calcutta (entomologist to the Department of Malaria Research of Bengal), and Dr. K.S. Mhaskar's 1913 Mosquito Survey in Karachi<sup>16</sup>.

In our nation, the malaria eradication effort has been in operation for the past 50 years under several titles. In 1964, when the program was at its most successful, malaria was reduced to fewer than 100,000 cases with no fatalities. But things got out of hand, and by 1976, there were 6,467,215 cases of malaria worldwide, with 99 fatalities<sup>10</sup>. There was an 11% drop in the incidence of *P. falciparum* and a 3.4% decrease in the total number of malaria cases between 2001 and 2000<sup>18</sup>.

#### *Leprosy :*

One of the main problems in British India was leprosy. Following the discovery by G.A. Hansen in 1873 that leprosy is spread through touch, H.V. Carter of the Bengal Medical Department assumed leadership of the disease's control in India. The central imperial authorities of India held him in great regard and suggested isolating lepers. He suggested that leper asylums be created in India, similar to ones that were established in Norway at the time.<sup>5</sup>

The distribution of lepers, hereditary transmission, predilection potential, contagiousness, and the relationship between disease and nutrition and sanitation were the subjects of excessive observation and investigation<sup>1</sup>. There were about 120,000 leprosy patients in

India in 1881; by 1921, that number had dropped to 102,000. These were very good numbers considering India's high birth rate<sup>11</sup>. Leprosy cases have decreased significantly over time, from 2.91 million in 1981 to 0.44 million cases as of March 2002. From 57 instances per 10,000 people in 1981 to 4.2 cases per 10,000 people in 2002, the prevalence rate has decreased. As of 2002, an estimated 0.44 million cases had been reported. The coverage of multidrug treatment (MDT) has reached 99.5%<sup>18</sup>. Nevertheless, it remains significantly higher than the National Leprosy Elimination Program's aim of one case per 10,000 people<sup>10</sup>.

#### *Plague :*

Many plague outbreaks have been reported in India, but reliable records exist for the Kutch outbreak of 1812, which extended to Gujarat and Sind and lasted for almost ten years. In Hansi, in the Punjabi area of Hissar, an illness exhibiting all the symptoms of the plague was documented in 1828 and 1929<sup>15</sup>. There were reports of a plague outbreak in Rajputana, a state in Marwar, around 1836. When the bubonic plague pandemic struck Bombay in 1896, the first official records were kept.

The port cities of Bombay, Pune, Calcutta, and Karachi were the first to record it. Except for a few isolated cases in other regions of the nation, it was limited to Bombay during the first year. Epidemics were reported in Central Provinces, Bengal, Madras, Hyderabad, Punjab, Mysore, and Kashmir in the second year. It ravaged nearly the entirety of India until approximately 1899. According to official records, the devastating disease claimed the lives of almost 2 million people up until the end

of 1903, but the true numbers may be significantly higher.

Due to its location along the international trade route, the Indian British Imperial administration was under tremendous pressure to handle this problem. Under the direction of Professor T.R. Frasier, a Materia Medica professor at the University of Edinburgh, the Plague Commission was established in 1896. Members of it included professors of pathology at Army Medical College Netley, Prof. A.E. Wright, professor of pathology, and J.P. Hewett, interior secretary to the Indian government, among others from different departments.

In 1904, the Plague Commission reported that the disease was highly contagious and that human movement was a major means of disease transmission since infected people carried the germs with them. The commission made recommendations for the essential preventive actions to clean up and remove contaminated areas, regulate mass transit, and enhance hygienic conditions. The panel recommended expanding lab space and bolstering public health services as well<sup>9</sup>.

The Committee to Study Plagues was established. Many kinds of study were carried out in 1897-20, as reported by Surgeon Maj. Lyons, President of the Plague Study Committee, and Surgeon Capt. Childe. At any given time, there are thought to be between 1.5 and 2 million cases of cancer. Every year, cancer results in over 600,000 new cases and 300,000 fatalities<sup>9</sup>.

According to Hankins' research, the plague bacillus does not spread through

saprophytic methods from the outer environment. Poor sanitation and the ensuing spread of animal and human excretions were its primary causes. According to W.B. Bannerman, Superintendent of the Bombay Plague Research Laboratory (1897–1900), Haffkine's Anti-Plague vaccine was utilised and large-scale inoculations were made that proved beneficial. The reports of G. Polverine, Officer in Charge of Parel Municipal Laboratory, and Col. J. S. Wilkins, Special Medical Officer for Plague Operations, detail the usage of Professor Lusting's curative serum and its effectiveness<sup>2</sup>.

There were five plague committees set up to monitor the preventive efforts. From 1966 to 1993, India did not have a laboratory-confirmed plague. On the other hand, Surat, Gujarat, reported experiencing a pneumonic plague outbreak in 1994. A plague epidemic was recently reported from Shimla, Himachal Pradesh, in February 2002<sup>5</sup>. Yaws and plague, for example, have been contained. A total of 8515 yaws cases were reported and treated in 1997. Only 168 instances were documented and treated in 2001, however<sup>12</sup>.

#### *Other Communicable Diseases :*

Indian officers encountered an unusual endemic sickness in the province of Assam, known to the locals as Kala-azar and Beriberi. In 1898, Surgeon IMS G.M. Giles conducted a study on Kala-azar while on a special assignment in Assam. He deduced that the illness was ancylostomiasis with somewhat distinct symptoms<sup>9</sup>.

Surgeon Major Ronald Ross examined the illness in 1899 and concluded that Kala-

azar was a communicable disease with an epidemic that mimicked the symptoms of malaria, except for hepatomegaly and splenomegaly. Ross noted spleen and liver enlargement in these instances, but this was not a characteristic of malaria. Though ancylostoma does not cause these symptoms, they were discovered. Considering the absence of parasites and melanin as well as the presence of visceral invasion, particularly of the spleen and liver, Ross determined that the illness was not malarial fever but rather a comparable one both macroscopically and microscopically<sup>26</sup>. The number of ischaemic heart disease (IHD) cases in the nation is predicted to be 2.5 million<sup>9</sup>.

In 1883, T.G. Hewlett examined enteric fever and carried out in-depth investigations on specific case histories and environmental factors<sup>15</sup>. The Sleeping Sickness Commission was formed in 1908–1910 to look into the causes of the illness. Capt. F.P. Mackie researched the illness and defence strategies<sup>21</sup>. Major Clayton Lane's 1914/17 study on hookworm sickness and S.P. James' 1913 study on yellow fever were both noteworthy. The International Diabetes Federation estimates that 32.7 million Americans have diabetes. The WHO estimates the number at 28.7 million.<sup>9</sup>

It was well known for a long time that tuberculosis was fatal. It was prevalent in India, particularly in the lower socioeconomic strata. The Indian Tuberculosis Foundation was founded in 1939. Tuberculosis sanatoriums were established in mountainous regions to offer a healthy atmosphere and segregation because there was no clinically effective therapy for the disease at the time<sup>25</sup>. Each year, TB causes half a million fatalities<sup>4</sup>. When

Table : Estimated morbidity and mortality due to communicable disease in India

Disease	No. of cases/deaths (year)	Goal to be achieved	Source
Polio	1556 cases (2002)	Eradicate by the year 2005	WHO Weekly Epidemiological Report, 7th March 2003
Yaws	168 cases (2001)	Eradicate by the year 2005	Annual report, 2001-02. MOHFW. GOI
Leprosy	0.44 million cases (2002)	Eliminate by the year 2005	Annual report, 2001-02. MOHFW. GOI
Tuberculosis	2.2 million cases 0.42 million deaths	Reduce mortality by 50% by the year 2010	TB 2002 RNTCP, Status Report. 2001-02
HIV/AIDS	3.86 million cases (2000)	Achieve zero-level growth of HIV/AIDS by 2007	NACO 2000-2001 Report
Lymphatic filariasis	48 million cases (2001)	Eliminate by the year 2015	Annual report, 2001-02, MOHFW. GOI
Malaria	2 million cases, 972 deaths (2001)	Reduce mortality by 50%	Annual report 2001-02. MOHFW. GOI
Kala Azar	14,650 cases, 156 deaths (2001)	Eliminate by 2010	Annual report, 2001-02. MOHFW. GOI

Source: Central Bureau of Health Investigation

combined, diarrhoeal illnesses and acute respiratory infections account for two-thirds of all paediatric deaths in children under five<sup>10</sup>. Over the past 15 years, HIV/AIDS has become a more serious issue in India. There are about 3.86 million HIV-positive patients estimated in India<sup>10</sup>. In metropolitan areas, the prevalence of hypertension in adult populations is from 10 to 15%, while in rural areas, it is between 3 and 8%<sup>9</sup>. In individuals between the ages of 5 and 15, rheumatic heart disease (RHD) is estimated to affect 5 to 7 out of 1000 cases. India is home to roughly 1.9 million cases of RHD. Among all cardiovascular disorders (CVD), RHD accounts for 20% to 30% of hospital admissions in India<sup>8</sup>.

Based on the study's findings, India's hygienic and medical conditions appear to have significantly improved. The Indian Medical Service effectively contained deadly diseases like cholera and the plague. Leprosy, malaria, smallpox, and almost every other illness that was common in India at the time were all effectively controlled. In later years, epidemics were rare, and many diseases had nearly disappeared. Indian Medical Services officers and researchers made significant contributions to the study and prevention of illness. The goals, constraints, and priorities of medical officers stationed in India should be taken into consideration when evaluating their jobs. The work done during that period formed the basis

of what we have achieved today to improve the health of people, even though the traditional colonial design of medical services, Eurocentric policies, and neglect of the Indigenous population failed to alleviate the plight of the poor for many years.

### Conflicts of Interest

The author does not have any conflict of interest.

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