

A History of Leprosy in Iran during the 19th and 20th Centuries

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Abstract

From ancient time leprosy has been regarded as a terrifying, stigmatized disease; nevertheless, its cause remained unidentified up to the late 19th century. For centuries numerous leprosy victims worldwide suffered from its morbidity and were socially isolated. The afflicted individuals were segregated because they were considered 'unclean' and had to live in leper colonies, generally under very poor conditions. Physicians believed that leprosy was an incurable, highly contagious, and hereditary disease. In 1873, the Norwegian physician, Gerhard Armauer Hansen (1841 – 1912), ended the myth of leprosy and discovered its causative agent, known as *Mycobacterium leprae*. Hansen's discovery was a great triumph in the fight against leprosy. In the 1930's, the first effective antileprosy drug, dapson, was introduced and in the early 1980's multi-drug therapy was popularized because of high efficacy in resistant cases. Here, we have presented a brief look at the history of leprosy in the world with special focus on the historical account of leprosy in Iran, particularly during the 19th and 20th centuries.

Keywords: history, Iran, leprosy

Introduction

The history of leprosy dates back to antiquity. The word leprosy is derived from the Greek term 'lepros', which means scaly.¹ Today leprosy is known as a chronic granulomatous disease with a relatively long incubation period caused by *Mycobacterium leprae*, which may involve the skin, peripheral nerves, bones, and mucosa of the upper respiratory tract. Most people are naturally immune to leprosy. Leprosy is a bipolar disease and may occur in two forms, which differ in many aspects. They are tuberculoid leprosy, with a T-cell mediated response and lepermatous leprosy (anergic lepermatous leprosy). *Mycobacterium leprae* are obligate intracellular gram positive, acid-fast bacilli, which cannot be grown *in vitro*. They grow in the footpads of mice and in the nine-banded armadillo. This organism does not secrete toxins and shares many antigens with other mycobacteria.²

Despite the availability of efficient treatments, leprosy is still known as "The Living Death".³ According to the World Health Organization (WHO), it has not been globally eradicated.⁴ From the mid-1960s to the mid-1980s, between 10 and 12 million leprosy patients were identified globally. The estimated number decreased to 5.5 million in 1991 because of effective treatments. In the same period, the number of patients who developed leprosy-related deformities, including those who were cured, was between 2 and 3 million.⁵ In May, 1991, the WHO declared the "Elimination of Leprosy as a Public Health Problem by the Year 2000", which aimed to decrease its prevalence to less than one case per 10,000. In 2004, the majority of leprosy patients were residing in several countries including India, Brazil, Nepal, Madagascar, Myanmar, and Indonesia.^{3,6} Currently some areas of Angola, Brazil, the Central African Republic, Congo, India, Madagascar, Mozambique, Nepal, and Tanzania are highly endemic foci of leprosy.⁴ Since 1982, many patients in the world have completed antileprosy treat-

ments and are no longer included in the global case registry.⁷ In endemic countries, early detection of the cases and on time multi-drug therapy (MDT) are highly recommended.⁸ Leprosy is rare in the USA, however, an increased number of cases have been seen during the past decades as a result of the influx of immigrants from Asia and other endemic regions.

Global historical background of leprosy

The exact origin of leprosy is unknown, but investigators estimate that it initially originated in Eastern Africa or the Near East, and then spread to other parts of the world as the result of migrations. In the past five centuries, Europeans or North Africans have introduced leprosy into West Africa and the Americas.⁹ Evidence of leprosy has been found in ancient China, Egypt, and India.¹⁰ Based on the paleopathological studies of ancient skeletal remains, researchers have traced leprosy in India to 2000 B.C.¹¹ The most detected leprosy-related skeletal changes have been around the oral and nasal cavities, as well as the extremities. The rhinomaxillary bone changes led to the so-called "faces of lepers" (*facies leprosa*), produced by inflammatory reactions caused specifically by the leprosy bacilli.¹²

For hundreds of years, leprosy was equal to fear, misfortune, and social rejection. Most people thought it was a consequence of evil deeds and a punishment for sin.¹³ They considered the lepers as 'unclean' people who must be banned from entering towns and cities.¹⁴ Based on these assumptions, numerous leprosaria were established, usually outside of the cities. As Professor H. E. Sigerist, the medical historian wrote, "the sick man was an outcast."¹⁴ By 1225 C.E. around 19,000 leprosaria had been founded in Europe, mostly consisting of small leper colonies that only received daily food and infrequent care.¹⁵ At the end of the Middle Ages when the incidence rate of leprosy declined, some leprosaria were utilized for other purposes such as rehabilitation centers for psychiatric patients. This compulsory segregation continued in most countries up to the 19th and 20th centuries. Michel Foucault (1926 – 1984), the French philosopher, social theorist, and historian, criticized the social exclusion of the lepers and wrote, "At the end of the Middle Ages, leprosy disappeared from the Western world. In the margins

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of the community, at the gates of cities, there stretched wastelands, which sickness had ceased to haunt but had left sterile and long uninhabitable.”¹⁶

The causative factor of leprosy remained hidden for a long time. In the last decades of the 19th century a Norwegian physician, Dr. Armauer Hansen (1841 – 1912), pointed out that, “leprosy being a disease due to a specific agent and not to a way of life or heredity”.¹⁷ In 1873, he discovered *Mycobacterium leprae* as the responsible infective agents of leprosy.¹⁸ Thereafter, a great triumph for the fight against leprosy was commenced; the old mysterious enemy was recognized and the disease was named after him as Hansen’s disease. Later, in the 1930s, the introduction of antileprosy medications that included dapsone (diamino-diphenyl sulphone), sulphomethoxine, and more recently clofazimine and rifampicin, ended the myth of the incurability of leprosy.¹⁹ Between 1963 and 1996, dapsone was used for treatment of the lepers as well as for patients with tuberculosis, malaria, and AIDS-related pneumonia.²⁰ However, in 1982, resistant cases of leprosy emerged and the WHO suggested MDT that consisted of dapsone, rifampicin, and clofazimine. Despite these efforts according to experts at the WHO (August 2010), annually, 219,826 new cases of leprosy have been detected worldwide.²¹ The association of leprosy with HIV infection is a concern of leprologists. Cellular immunity defects in leprosy occur, which in turn may raise the vulnerability of lepers to co-infections,²² similar to the defective immunity in tuberculosis patients.²³ Co-infection of leprosy with HIV has been reported; however, in India the country with the highest number of leprosy cases as well as an endemic area of HIV infection, several studies were carried out that did not show leprosy-HIV co-infection.²⁴

A history of leprosy in Iran

The earliest document indicating the existence of leprosy in Iran was Avesta, the Zoroastrian religious book, in which several dermatologic diseases, including leprosy, were mentioned.²⁵ Similar to other nations, ancient Persians also believed in the segregation of lepers from the community.²⁶

During the Islamic period, leprosy was a familiar entity to Iranian physicians. The first Iranian physician who described leprosy was Ali ibn-Rabban Tabari (838 – 870 C.E.), the author of *‘Firdous al-Hekmah’* (Paradise of Wisdom). In the next centuries, Ali Ibn Abbas Majusi Ahvazi (10th century C.E.), known as Haly Abbas in the West, expressed the clinical manifestations of leprosy in his book entitled *‘Tebb Maleki’* (Royal Medicine). The distinguished Iranian physician Ibn-Sina, or Avicenna (980 – 1037 C.E.) also discussed the clinical findings of leprosy in *‘Canon of Medicine’*.²⁷ Later, Ismail Jorjani (1040 – 1136 C.E.), in *‘Zakhireh-ye Kharazmshahi’* (Treasure of Kharazm Shah) described leprosy with a destructive nature and as a contagious illness due to close contact.²⁸ The equivalent Persian word for leprosy was *Khoreh* meaning something which eats or destroys the tissues, indicting the destructive character of disease. However, since the earliest centuries of the Islamic period in Iran, the Arabic word *Jozam* has been gradually substituted and is still in use.

Leprosy in the Qajar period (1794 – 1925)

The historical background of the exact prevalence of leprosy in previous centuries of Iran is unknown; however, the history of leprosy during the past two centuries is more informative. The first

Persian treatise on leprosy appeared in the Qajar period (1794 – 1925) and was written by a physician in Tabriz, Abdol-Hossein Khan Zonouzi (entitled *‘Filsof ad-Dowla’*, 1866 – 1942).^{29,30} During the reign of Nasser al-Din Shah (1848 – 1896), an Austrian physician named Dr. Jakob Eduard Polak (1818 – 1891) was appointed in 1851 as the first medical teacher at the Dar-al-Fonun School. He spent nine years in Iran and wrote his observations in *‘Persien, das Land und Seine Bewohner’* (Persia, the Land and its Inhabitants), published in Germany in 1865 (Figure 1).³¹ In this travelogue, Polak mentioned three main endemic foci of leprosy at that time: Zanjan (the former center of Khamseh Province), Khalkhal, and Qaradagh (in Azarbaijan Province). He wrote that leper sufferers lived outside cities in very poor conditions. He also reported about two patients of leprosy with finger amputations in Ghazvin.³²



Figure 1. The front cover of the travelogue of Dr. Polak, *‘Persia, the Land and its Inhabitants’*, published in Leipzig-Germany in 1865. It was translated into Persian in 1982 by K. Jahandari.³²

Later, the vicegerent of Polak at the Dar al-Fonun School was a Dutch physician, Dr. Johan Louis Schlimmer, who came to Iran in 1849. Initially he practiced in Talesh and Rashat in Gilan Province (northern Iran) and was engaged in the treatment of lepers.³³ Schlimmer described a case of leprosy referred to him that was cured after ten months.³⁴ In 1862, he wrote a book on dermatologic disorders, including leprosy, entitled *‘Beauty of the Human Bodies’* (*‘Zinat-ol-Abdan’*; Figure 2).

Another European who came to Iran in 1855 for a period of three years was Joseph Arthur Comte de Gobineau (1816 – 1882), the French writer, historian, and diplomat. He mentioned in his memoirs that he saw several leper patients, including children who lived in small huts on the outside of town, near Mianeh in Azarbaijan Province.³⁵ According to Dr. W. Floor, based on Neligan’s report during the Qajar period the main endemic foci of leprosy in Iran were Khorasan, Azarbaijan, Gilan, Kermanshah, and Kurdistan. He added that lepers were not allowed to enter towns³⁶ and in Khorasan and Azarbaijan the officials encouraged lepers to live in

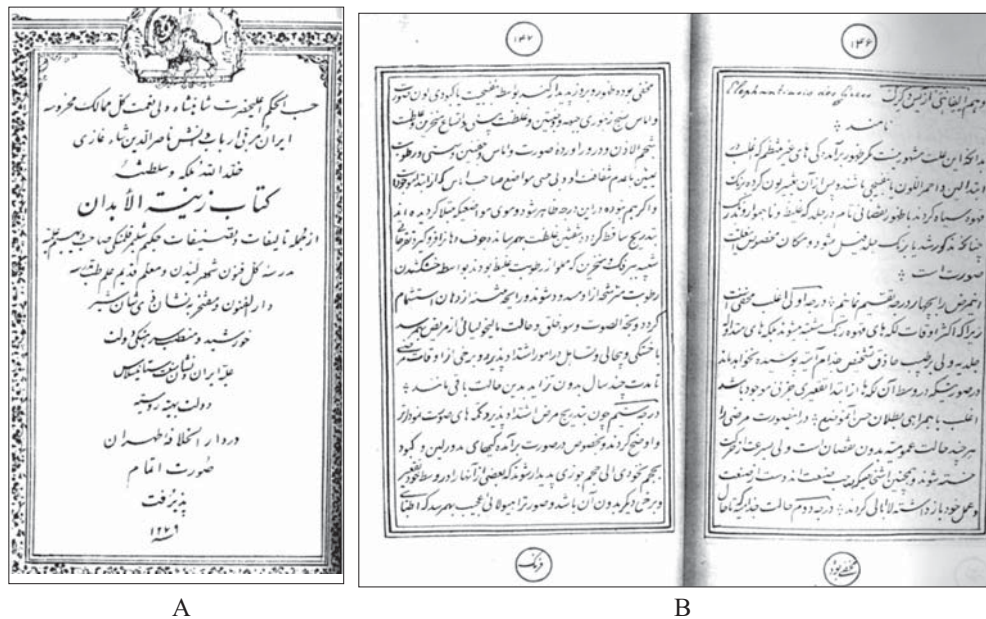


Figure 2. 'Zinat-ol-Abdan' written by Schlimmer and published in Tehran in 1862. **A)** The front cover of the book and **B)** two pages that describe leprosy.

their own colonies (Figure 3).³⁵ Floor pointed out that there was a village named *Payon* (or *Payan*) located six miles from Tabriz with around 500 lepers who lived there. In the 1850s Aziz Khan Sardar, the governor of Tabriz ordered that all lepers from Azarbaijan Province must live in this village. He gave the lepers land for farming and agricultural implements, and consequently a separate leper colony was established. By 1920, there were three leper colonies in Iran, Arpadarrassi and Khalkhal in Azarbaijan (northeastern Iran) and near Mashhad, Khorasan Province (northwestern Iran). Another leper colony was located near Sahneh in Kermanshah Province in western Iran.³⁶



Figure 3. The yellow color demonstrates the main endemic foci of leprosy during the last decades of the Qajar Dynasty (1794 – 1925).

Fight against leprosy in Iran (1925 – 1979)

The Public Health Administration (*Sehhyeh-e Koll-e Mamlekati*) was established in 1926.³⁷ According to a report by the Director of the Public Health Administration in 1932, the official number of registered leper patients was 400, but the actual number was higher. They were scattered in various parts of Iran, mostly in Khorasan, Mazandaran, Azerbaijan, Ghazvin, and Kurdistan. He also

added that another leper colony was established near Mashhad and one leper house in the port city of Busheher.³⁸

Major leprosaria in Iran

• Bababaghi Leprosarium -Tabriz

Bababaghi Leprosarium, which is now affiliated with the Tabriz University of Medical Sciences has been regarded as a major leprosarium in Iran for many years. It was located around 12 km from Tabriz, in Eastern Azarbaijan Province. Before 1848, when Nasser al-Din Shah Qajar was the crown prince of Tabriz, the Bababaghi village was his hunting place. In 1933, the Bababaghi Leprosarium was established. In that year, 75 hectares of Bababaghi lands were transferred to the Public Health Administration to be considered as a place for the settlement of the lepers. At first, 40 rooms were built then it was gradually expanded and lepers from different cities of Iran settled in Bababaghi. As mentioned earlier, in the last decades of the Qajar period one of the three leper colonies that consisted of 74 lepers was located in Arpadarrassi, near Ahar—a small town in Eastern Azarbaijan Province. The first group of patients who came to the Bababaghi Leprosarium were lepers from Arpadarrassi. In the beginning, the neighboring villagers supported these lepers with donations.³⁹ In this leprosarium, several European nuns, mainly from France, also voluntarily worked there for several years. Then, in 1957 the “Society for the Support of Lepers” was established in Tabriz to help the lepers of the Bababaghi Leprosarium. It dissolved two years later but was reestablished in 1962 and finally joined the “Society for Help to the Lepers in Iran”.⁴⁰ During the 1960’s, the living conditions of the lepers at the Bababaghi leprosarium were very unfavorable but gradually improved over the next decades. “The House is Black” (*Khaneh Siah Ast*), produced in 1962 by a charitable organization, was a documentary short film directed by Forough Farrokhzad (1935 – 1967), a poet and film director, which reflected the suffering of the lepers at the Bababaghi Leprosarium in those years.⁴¹

The efforts of Dr. Mohammad Hossein Mobayen (b. 1927, Tabriz) and his wife have been instrumental in the expansion and

promotion of care at the Bababaghi Leprosarium. Dr. Mobayen is a dermatologist who, for around 40 years, has attempted to improve the quality of life of the lepers in Azarbaijan, particularly at the Bababaghi Leprosarium. He graduated from Tabriz University School of Medicine in 1955 and was employed at the Ministry of Health in 1959. He started his professional career at the Bababaghi Leprosarium in 1962, and one year later became its director, which he continued until 1988. He also continued his training in dermatology at Tabriz University and graduated in 1975. His wife, Mrs. Neshat Vossoughi, was a midwife who worked for several years at the leprosarium.⁴² Dr. Mobayen (Figure 4) wrote several papers on leprosy as described below.

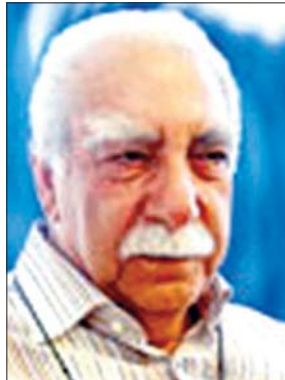


Figure 4. Dr. Mohammad Hossein Mobayen (b.1927).

•Jozam Khaneh-ye Mehrab Khan (Mehrab Khan Leper House) – Mashhad, Khorasan Province

The Mehrab Khan Leper House in Mashhad, Khorasan Province has a long history. During the period of Shah Abbas I (1571 – 1629 C.E.), Mehrab Khan was the governor of Merv, a historic Persian city now in Turkmenistan, Central Asia. According to his will, his properties were bequeathed to the charitable foundation (Astan Quds Razavi Organization) that managed the shrine of Imam Reza, the eighth of twelve Imams according to the Shi'a sect of Islam. Later, during the Qajar Dynasty, Mehrab Khan's property was converted to a village named Mehrab Khan Village located southeast of Mashhad. Until 1923, this village was supervised by Astan Quds Razavi. Between 1924 and 1926 Mirza Abolwahhab Asef-o-Doweleh, the governor of Khorasan, ordered that lepers who came to Mashhad from various parts of Iran should live in an old castle in Mehrab Khan Village and he devoted an annual budget of 500 tomans for each leper. Later, between 1928 and 1931, during the period of Reza Shah, Ala-o-Soltan, the deputy chairman of Astan Quds Organization ordered houses to be constructed for lepers. Between 1943 and 1954, 38 buildings were constructed for the cured lepers and their families. By 1955, the number of lepers at the Mehrab Khan Leper House reached 312, and in 1957, its supervision was transferred to the Ministry of Health (Vezerat-e Behdari) and gradually the old buildings were destroyed. In 1958, a new asylum with 130 rooms was constructed and eight hectares of land of the Mehrab Khan Asylum was enclosed by a fence. Finally, the Ministry of Health officials dissolved the Mehrab Khan Asylum and it was changed to a hospital located in northeast Mashhad,⁴³ which is now called Hasheminejad Hospital and is affiliated with Mashhad University of Medical Sciences in 1982.

• Razavi Leprosy Rehabilitation Center – near Birjand, Khorasan Province

The Razavi Leprosy Rehabilitation Center (Behkadeh-ye Razavi, formerly known as Behkadeh Raji) was the first modern, economically self-sufficient, and independent village that cared for lepers in Iran. It was established in 1961, near Birjand in Northern Khorasan Province. Its creation was the result of the efforts of the Health Minister of the time; Dr. Abdol-Hossein Raji (1902 – 1972)⁴⁴ who was Director of the Society for Help to the Lepers in Iran for several years. In this modern leprosy rehabilitation center, the lepers were treated according to the recommendations of the WHO. By 1977, 400 houses and several educational, professional training and entertainment centers, as well as six villages near this leper rehabilitation center were founded by French and German charity foundations. In 1960, 900 lepers and their 180 healthy children lived there. For a number of years it was supervised by the 'Society for Help to the Lepers in Iran'. In 1980, the name of the society changed to 'the Organization for Fighting against Leprosy', which was supervised by the Ministry of Health. Finally, in the 1980's this rehabilitation center was dissolved and patients who were cured and their families were transferred to the buildings near the asylum.⁴⁵

Teaching leprosy to medical students

The first teacher of microbiology in Iran at the School of Medicine (Madreseh-ye Tebb) in Tehran was Dr. Kerandel who taught medical students microbiology, including leprosy, between 1928 and 1934. The students were taught theoretical concepts of microbiology in the fourth year of their training.⁴⁵ Dr. Kerandel was the director of the Pasteur Institute of Iran and came to Iran in 1921.⁴⁶ After the establishment of School of Medicine of Tehran in 1934, Dr. Hossein Sohrab (b. 1902 - Isfahan), the French-trained microbiologist, was appointed as a professor of microbiology in 1940 and Dr. Faraj-olla Shafa (b. 1914) was an associate professor. The students had a practical course in microbiology where they learned to find leper bacilli in nasal smears.⁴⁵ In the pathology course, Dr. Mostafa Habibi Golpayegani, the professor of pathology in Iran, taught the histopathologic characteristics of leprosy to medical students.

Leprosy research in Iran

In subsequent years, researchers have been investigating leprosy in Iran. One of the earliest informative papers on leprosy in Iran was published in the International Journal of Leprosy in 1973, and was written by Dr. E. Kohout, a professor of clinical pathology at the Shiraz School of Medicine and her Iranian colleagues. They described in detail the distribution of leprosy in Iran according to 11 previous studies carried out between 1960 and 1971. Based on this paper, the maximum number of leprosy cases in Iran in 1964 as reported by B. Aramesh, a professor of public health at Tehran Medical School, was 12000. In addition, the studies carried out on leprosy in Iran between 1960 and 1971 were either by researchers at the national level or in a specific area, including Tabriz (one study by Pettit in 1960), Shiraz (Mehrgan, 1964) and Southern Iran (Sehati, 1970 and Kohout, 1971). The total number of detected cases of leprosy in Iran in 1965 was 4852 and in 1970 there were 450. This study showed that in a five-year period, the detected cases of leprosy considerably declined, and in 1970 some parts of Iran were totally leprosy-free, including Hamadan, Bakhtiari,

Khuzestan, Isfahan, Semnan, and Kerman. Later, in 1977, Nasser and his colleagues reported the results of their study on 907 cases of leprosy, of which 709 cases were at the Bababaghi Leprosarium and 198 cases at Ahar-Azarbaijan. They reported that around 70% of all cases were males.⁴⁸ In another study published by Golphoroushan and his coworkers in 2006, 157 new leprosy patients (68% males and 32% females) registered at the Bababaghi Leprosarium were studied. Lepermatous leprosy was the most common type of disease, especially in male patients.⁴⁹ In a 2009 study, 145 leprosy patients referred to the Bandar Abbas Leprosy Center (Southern Iran) between 1972 and 2004 were investigated by Davoodian et al. Based on their findings they suggested that family members and neighbors of leper patients should also be screened.⁵⁰

Some papers have been devoted to the evaluation and treatment of leprosy complications. For example, in 1993 Abbot and his colleagues, including M.H. Mobayen, evaluated finger tip blood flow and peripheral dysautonomia in several lepers from Azarbaijan, Iran and compared the results with leprosy patients in Maharashtra, India.⁵¹ In another study, published in 2002 by Abbot and coworkers (including Iranian physicians), the researchers investigated the impact of immunotherapy with *Mycobacterium vaccae* on peripheral blood flow in long-treated leprosy patients.⁵²

Current status of leprosy in Iran

Leprosy has been an endemic disease in Iran; however, in recent years some of the main communicable diseases, including leprosy, have been eliminated.⁵³ According to the WHO, Iran is among the countries that have achieved leprosy elimination, and has less than one case per 10000.⁵⁴ In addition, in most Iranian provinces, leprosy seems to be eradicated. For instance, between 1975 and 2002, no leprosy case was detected in Isfahan.⁵⁵ However, as the Director of the Center for Research and Training in Skin Diseases and Leprosy (CRTSDL) estimated, total eradication of leprosy in Iran could take a further 10 – 15 years.⁵⁶ CRTSDL was founded in 1992 and Dr. Yahya Dowlati, an American trained dermatologist, is its director. The main objective of this center is the coordination of training and research activities on skin diseases and leprosy in Iran. In 1993, CRTSDL joined with the Tehran University of Medical Sciences.⁵⁷ At present, an administration in the Ministry of Health and Medical Education is the responsible authority for the control of leprosy and tuberculosis in Iran.

In conclusion, for centuries leprosy has profoundly affected the lives of millions of people worldwide. There is a great lesson we can learn from the disastrous history of leprosy for tomorrow. As a quotation by Mother Teresa (1910 – 1997), who served many poor people and patients including lepers for several years, "The biggest disease today is not leprosy or tuberculosis, but rather the feeling of being unwanted".⁵⁸

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