

Nasarwanji Hormusji Choksy (1861–1939): a pioneer of controlled clinical trials

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Introduction

Nasarwanji Hormusji Choksy was a pioneer of controlled trials, being one of the earliest investigators to use alternate allocation of patients to create similar treatment comparison groups.^{1,2} Who was Nasarwanji Hormusji Choksy?

Choksy was born on 7 October 1861 in Bombay, and he studied at Elphinstone High School there. In 1879, he joined Grant Medical College, which had been established in 1845 as the first institution in Western India to provide education and training in Western medicine. In 1884, after a brilliant undergraduate career during which he was awarded scholarships and prizes for proficiency, Choksy topped his class in the final examination for a Licentiate of Medicine and Surgery.

Following graduation, the Principal of Grant Medical College, Henry van Dyke Carter, appointed Choksy tutor in Anatomy, Materia Medica and Botany, a post he held between 1884 and 1887. In 1887, he was appointed Secretary to the Medical Committee of the Indian Factory Commission, which had been established in 1884 to enquire into the physical condition of mill workers and the sanitary state of mills.

During the 1888 smallpox epidemic in Bombay, Choksy was placed in charge of a temporary smallpox hospital. He was so competent at this job there that he was appointed Medical Superintendent of the Arthur Road Hospital, which had been set up in 1892 exclusively for the treatment of infectious diseases. The hospital is still functioning today, albeit now named the Kasturba Infectious Diseases Hospital. Choksy campaigned diligently for smallpox vaccination, showing through carefully collated statistics that even one primary vaccination reduced case mortality.

From 1893 to 1899, Choksy edited the *Indian Medico-Chirurgical Review*, which was the voice of the Bombay medical profession. It lobbied repeatedly for an improvement in the status of Indian doctors,

and for the higher positions in government service to be opened to them. As President of the Bombay Medical Union, an organisation of Bombay doctors established in 1884, Choksy campaigned for recognition of parity between Indian and British medical degrees, so that holders of the former could qualify for government posts.

Plague

All through the plague epidemic of 1896–1897, Choksy worked doggedly at the Arthur Road Hospital in the face of public apathy and suspicion. In a candid report of his experiences,³ he recounted how he had to confront very challenging problems in running the institution. There were a host of 'pseudo-specialists' who pretended to know all about plague, and, for a time, forgot their regular avocations as tram conductors, railway guards, engineers, postal inspectors or clerks, and suddenly blossomed into 'plague specialists', 'vaunting their nostrums' day after day.

Most cases of plague had been compelled to go to the hospital after they had been judged to be beyond all help. Choksy's experience in treating cases of plague, smallpox and cholera was considered unique by fellow Indian physicians. In fact, he fell victim to plague himself in 1897, and the timely use of Alexander Yersin's serum that may have contributed to his survival. Yersin, previously of the Pasteur Institute, had first investigated plague in Hong Kong in 1894 and then in Indo-China, and he had published the results of his experiments on a serum for treating plague. Yersin had made large-scale serum production possible by using horses as sources of antitoxin.⁴ Choksy showed that Yersin's therapy had been applied from 1905 to 1908.⁵

Choksy served at the Arthur Road Hospital until 1922; indeed, his name came to personify the hospital. Between 1902 and 1921 he also supervised the Maratha Plague Hospital, which treated only plague patients. In recognition of his work during the plague

epidemics, the British administration gave Choksy the title *Khan Bahadur*.

Choksy was a pioneer in using alternate allocation of patients to compare alternative treatment strategies.^{1,2,5-7} His controlled trials of Alessandro Lustig's serum were reported in *The Lancet*,¹ *The Indian Medical Gazette*⁶ and the *British Medical Journal*.²

The object with which this series was started was to determine the statistical value of the serum, and hence it was resolved to conduct observations in 1000 cases of plague, 500 to be treated with the serum and 500 by ordinary methods, the latter acting as controls, and the cases were to be taken for treatment alternately [emphasis in original] in the order of admission and without any attempt at exclusion of any sort [emphasis in original].¹

In the 1901 account of the study reported in *The Indian Medical Gazette*, Choksy⁶ concludes:

1. the serum exerted a distinctly favourable influence on the course of plague;
2. where it failed to avert death, it had prolonged life;
3. it did not exert much effect in those types of plague characterised by an extremely high mortality rate;
4. its application was mainly limited to the bubonic type of plague;
5. encouraging results (59.3%) of recoveries had been obtained, and it would be more useful, in private practice, where cases were seen early in the course of the disease;
6. it exerted no deleterious influence on the patient but was capable of conferring immediate but temporary immunity against plague, this immunity lasting from 10 to 15 days.⁶

Choksy served on the Procedure Sub-Committee and the Transactions Committee for the 1909 Bombay Medical Congress. In his presentation to the Congress entitled 'The serum therapy of plague in India',⁵ he described the treatment of 275 cases with subcutaneous injection of Lustig's serum and noted that the investigations made by the Plague Research Commission had indicated that recovery was indeed possible. Successive reports show a gradual recognition that obtaining useful evidence entailed excluding both moribund and convalescent cases from the trials. He noted that although the serum treatment prolonged life in septicaemic cases, it did not always ensure recovery.⁷

In addition to his papers on serum therapy⁵ and symptomatic treatment of plague,⁸ Choksy presented papers on the treatment of cholera⁹ and Bombay relapsing fever.¹⁰

Leprosy

From early in his career Choksy retained a special interest in leprosy. In 1890, Bombay's Municipal Commissioner, HA Acworth, selected Choksy as Superintendent of the new Homeless Leper Asylum at Matunga, a post he occupied until his transfer to the Arthur Road Hospital in 1897. Choksy studied leprosy medically, observing the habits and problems of the inmates of the Asylum – vagrant lepers arrested for spreading 'an infectious disease dangerous to life'.¹¹ He remained on the management board of the Homeless Leper Asylum until 1934. In 1924, a quasi-official body, the Indian Council of the British Empire Leprosy Relief Association, launched a major initiative to control the spread of this dreaded disease. Choksy was named Honorary Secretary of the Bombay Provincial Branch of the Association.

Public health

From the early 1900s onwards, initially working with John Andrew Turner, Bombay's activist Health Officer, Choksy was involved in a collaborative effort to promote public health through the establishment of semi-official organisations. These were supported by the Bombay municipality, other doctors and philanthropists. Thus was set up the Bombay Sanitary Association, in 1904, to promote 'sanitary consciousness' through public lectures and the training of personnel. Choksy gave the first public lecture under the auspices of the Association, which was entitled 'Some common sense views on plague.' He was also associated with the Bombay Anti-Tuberculosis League, founded in 1912,¹² which increased awareness of the disease and provided treatment.

Being idealists, Turner and Choksy concluded that poverty was the root cause of the most prevalent health problems and wondered whether some of the funds collected for the Anti-Tuberculosis League should be distributed as financial aid. Education proved to be 'tedious' unless accompanied by improvements in economic conditions. They maintained that a large percentage of the people were not yet aware of the advantages of modern medicine and public health, which they wanted to be modelled on the work done in Europe. Nevertheless, they recognised the differences between Bombay and Western cities, including the absence of any poor law administration or infirmaries; the difficulty of any systematic treatment beyond attendance at a dispensary; overcrowding and sanitary defects; differences in individual resistance and vitality and the seclusion of women and the absence of any recreational facility for them and for children.

In the summer of 1923, using the columns of the *Times of India* in 1923, Choksy urged the Government to create a special sanitary preventive and curative service, under the Ministry of Health. Even if the masses were not ready for an intensive campaign of sanitary education, what they needed, he said, were concrete demonstrations of the benefits that sanitary reform promised. The *British Medical Journal*¹³ drew attention to Choksy's proposals, and commended them as being of great value in the effort to arouse public opinion:

It had the merits of propounding a constructive policy and of being advocated by one whose medical education has been indigenous and who was intimately connected with the political and medical history of the country, its possibilities and aspirations and the social and sanitary conditions, which formed such an 'obstacle' to comprehensive and effective means of public health.¹³

National and international recognition

Choksy served as President of the Bombay College of Physicians and Surgeons and he was a member of the Bombay Medical Council from 1912 to 1932.¹⁴ He received many distinctions from abroad, including Chevalier, Crown of Italy (1899), member of the Munich Medical Society (1901), member of the Medico-Physicians Academy of Florence (1903), MD *honoris causa*, University of Freiburg, Germany (1903), Médaille d'honneur des Épidémies, République Française (1906) and Commander of the Indian Empire (1922).

Nasarwanji Hormusji Choksy was knighted in 1929, and died on 1 December 1939.¹⁵

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