

# Measures to combat Malaria in colonial Mysore

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**Abstract-** Princely State of Mysore in India was under the British colonial rule during 1881 to 1947. This historical research article aims to document the role of Princely Mysore State in campaigning against the outbreak of Malaria. The methodology adopted is the historical perspective. Modus operandi adopted by the Princely Mysore state to counter the deadly epidemic is also highlighted. There has been a remarkable progress in the prevention, control and eradication and adapted vigorous measures to eradicate the disease. The article also deals with the large sums of money spent by the State, the epidemic disease regulation passed, a separate intensive health campaign formed, health camps, special officers appointed, a laboratory, separate hospitals established and various precautionary measures adopted. Infectious diseases still remain among the leading causes of death worldwide. New findings show similarities among H1 N1, Dengue and Malaria.

## I. INTRODUCTION

**M**alaria is an Arthropod-borne infectious and protozoan disease, caused by infection with parasites of the genus Plasmodium and transmitted to man by female Anopheline mosquito. **It is estimated that every 30 seconds a child dies of Malaria today, Malaria is attracting more attention as a serious global problem because currently no vaccine.** In Mysore State Malaria struck and spread over the state very frequently, the plantation and paddy laborers were affected by Malaria due to unhealthy weather conditions, increasing rains, poor sanitary facilities.<sup>1</sup> In 1897 the British Doctor Ronal Ross reported his remarkable discovery in India and he was awarded the Nobel Prize for Medicine in 1902, "20 August 1897, known as the mosquito day the day he made his discovery."<sup>2</sup>

**Malaria appearance in Mysore:** first made its appearance during 1920, and spread with increasing virulence in every direction of the state. Severity of the epidemic reached its height in the first year of the outbreak.

**Preventive measures:** Public health department of Mysore played an important role in disease prevention, and it involved with several health activities. There was serious shortage of medical personal and medical facilities in India and especially in Mysore state. To provide more medical facilities and to protect the people both in rural and urban areas the princely state of Mysore adopted certain measures to prevent the disease.

**The state was divided into Urban, Rural, City and District health units each being placed under an assistant**

**commissioner**, who was assisted by a medical officer of the grade of an assistant surgeon.<sup>3</sup>

Under the auspices of the International Health Division of the **Rockefeller Foundation of America, a health survey** of the State with special reference to **malaria was undertaken in 1927** and for this purpose the services of **Dr. Sweet** of the same Foundation were obtained.<sup>4</sup>

The formation of a separate **committee of Health campaign** to overcome such diseases, Special health officers were appointed, a laboratory was provided.<sup>5</sup>

**Special act:** To protect the people of the state government passed **Mysore Epidemic Diseases Act, II** in the year 1897.<sup>6</sup> Government adopted vigorous measures to check the spread of the disease by making provision for the treatment of the disease in special hospitals.

## II. CURATIVE MEASURES

**Special Hospitals:** The permanent hospitals were established in the state called **Epidemic Disease Hospitals** at Bangalore in 1891, in 1898 at KGF and Mysore in 1926 working throughout the year to treat patients. Five buildings were constructed with accommodation for 66 patients. Roof of Mangalore tiles, corrugated iron & bamboo tatty sides

**Temporary hospitals and health camps** were established whenever there was an outbreak.

**A Chemical laboratory** was founded in 1895 at Bangalore to give laboratory support in order to investigate the outbreak of the epidemic diseases for Chemical analyses and experiments. Blood and spleen examinations were done. **The collection of rainfall, temperature and vital statistics data was also continued.**

**Special Relief:** Chemical disinfection was carried out generally & disinfection by desiccations was introduced as an experimental measure.

Arrangements were made for the **distribution of Multi vitamin tablets.** The **30 medical units with the special officers** of medical were deputed to tour frequently in the affected areas to take immediate action in case of outbreak of Epidemics.<sup>7</sup>

**Neem leaves fumigation was undertaken** in the infected localities as a further measure of control.<sup>8</sup>

<sup>3</sup> Mysore Gazett, Government Press Bangalore, vol-III. Page no 1454

<sup>4</sup> Rao Sham M, Modern Mysore, Vol-VI p. 418.

<sup>5</sup> Sham Roa, Modern Mysore Vol – II, Bangalore p. 233

<sup>6</sup> Ibid

<sup>7</sup> 1940, P.21, Administrative Reports of Mysore State., Divisional Archives, Mysore

<sup>8</sup> 1947, P.142, Administrative Reports of Mysore State., Divisional Archives, Mysore

<sup>1</sup> Proceedings of Mysore representation Assembly 1903 K.S.A Bangalore.

<sup>2</sup> WHO (2008), World Malaria Report 2008.

**Four medical graduates of the State were deputed for training in sanitation to America.** As a result of the spleen survey conducted by Dr. Sweet,

**Malaria experimental stations three in number were established** one at Nagenhalli in the Mysore taluk the second at Mudigere and the third at Hiriyur during the year 1920.

**A Rural Health Unit also was established at Mandya**, as an experimental measure. For the purpose of determining the staff, equipment and budget get necessary for organizing Health Units in all the taluks eventually.

**The League of Nations Malaria Commission who visited the State in December 1929** at the invitation of the Durbar studied the malaria-control work at the experimental stations at Nagenhalli and Mudigere and the anti-malarial work in the Bangalore City and expressed their **appreciation** of the manner in which the problem was being studied. The Rockefeller Foundation lent in 1930 the services of Mr. J.J. Sweet, the Consultant in Health Department.

**A Board of Health was created to advise the Government** one of the main features of the scheme of reorganization was the constitution of Bureau of Epidemiology and Communicable diseases.<sup>9</sup> **Bureau of Malariology** was constituted in the Health Department. This bureau undertook institutional studies and research in Malaria. It directs and supervises the execution of preventive and control measures of Malaria. It also started **training the staff** and looks to regular supply of material and technical equipment. This bureau was in close co-operation with the Rockefeller Foundation of America. It organized a malaria research station at Sakleshpur.<sup>10</sup>

Mosquito control work was started at Nagenhalli and Mudigere by using **'Paris-green' on all the anopheline breeding areas** within a radius of a mile from the center of the town were regularly treated at weekly intervals with Paris green diluted to a one percent mixture with dust or ash or both. The efficacy of the dusting of Paris green was regularly checked by larval catches. Quality spleen and blood examinations were done in the peripheral zone.<sup>11</sup>

In addition to the use of Paris green, experiments were conducted on **larvicidal fish 'Gambusia' used successfully** for the eradication of anopheline larvae breeding in wells. Actual results showed that the fish compare favorably with Paris green as a larval control measure in wells. It is, therefore, proposed to gradually introduce them into all the wells and tanks of the state. A malaria survey of Mysore City was made and recommendations for malaria control work in the City were submitted during the year 1934.<sup>12</sup>

**Quinine factory was established at Mysore in the year 1930**, intensive treatment with **Plasmoquine and Tataquinine** was recommended as the only possible immediate remedy.

Anti malaria operations were continued during the year 1932 in Bangalore and Mysore. Paris green was applied to open sheets of water and Gambusia fish in the case of wells. After an initial year of observation, an experiment in the use small weekly doses of **plasmoquine** compound was tried in Marikanave village.

Measures were adopted to check the spread of the disease by the systematic administration of **free distribution of quinine to schoolchildren** was started.

**Pits and hollows were all drained to prevent stagnation of water and breeding of mosquitoes.** Removal of rank vegetation and destruction of cactus was also undertaken. In the Civil and Military Station, oiling pools and ponds carried out anti-malarial work systematically and in addition draw-wells were stocked with larvicidal fish supplied by the Health Department of the State.<sup>13</sup>

The Superintendent, Bureau of Epidemiology and Communicable Diseases, undertook a Special spleen survey of the State and of the 1,717 children he examined 67 showed enlarged spleens of various sizes, the spleen rate being 3-9 against 11-7 in 1930. Malaria survey of the under mentioned towns or rural areas of the State were done during the year 1932 and recommendations made for controlling the disease: (1) Sivanasamudram (2) Akkihebbal (3) Chatnahalli (4) Hoskote (5) Bhadravati (6) T.Narsipur and (7) Irwin Canal Area (Ibid)

A sample prepared at the **Government Industrial and Testing Laboratory** was found quite satisfactory. By the use of Gambusia (larvicidal fish). All the tanks wells in the Irwin Canal area were also stocked with Gambusia. Quinine was distributed free to patients suffering from malaria in this area and a spleen survey was made of 57 villages

Special malaria surveys and Malaria control work and general mosquito control operations were continued in villages. Five thousand two hundred and fifty-four wells were re-stocked with Gambusia fish.

**Prof. Buxton** of the London School of Tropical Medicine and **Mr. Dyer**, Sanitary Engineer of the Rockefeller Foundation, visited Mysore, Mandya, Nagenahalli and Hiriyur in the course of their malaria tour.

**Fortnightly conferences were started and twenty-one conferences held** on the anti-malaria operations. Engineering methods, such as cement-plastering and stone riveting of the sides and bed of the rivers undertaken.<sup>14</sup> Anti-malaria engineering works such as canalization of water courses with cement-plastering, stone-revetment, started in 1937.<sup>15</sup> Malaria control continued to receive, the close attention of the Department more than Rs. 2.35 lakhs being spent on anti-malaria works in various areas of the State. The scheme of Anti-Malaria measures in the extended area, comprising of 314 villages was sanctioned.<sup>16</sup>

**In 1945 Pyrethrum-spraying for the prevention of malaria** was found to yield very satisfactory results. A total quantity 319 gallons of **pyrethrum** was prepared in the Public Health Institute and an extent of **150 acres of land was planted with pyrethrum by the Forest Department**. The scheme was introduced for the control of malaria in a group of 198 villages and to cover 314 villages at a cost of about Rs. 1, 98,000 per

<sup>13</sup> Progress of Sanitation, MAR, 1932, p. 139 - 140.

<sup>14</sup> Vital Statistics and Medical Services, MAR, 1938, p. 152 and 153.

<sup>15</sup> Administration Report of Mysore, 1940, p. 154. Divisional Archives Mysore.

<sup>16</sup> Administration Report of Mysore, 1940, p. 21. Divisional Archives Mysore.

<sup>9</sup> Rao Sham M, Modern Mysore, Vol- II, p- 418 n 419.

<sup>10</sup> Rao Hayavadan C, Mysore Gezetteer, Vol-IV, p. 447.

<sup>11</sup> Vital Statistics and Medical Services, MAR, 1930, P. 63.

<sup>12</sup> Progress of Sanitation MAR, 1934, p. 136.

annum. Government has sanctioned a further sum of Rs.15 lakhs for carrying out the second stage of the scheme which involves canalizing 61 valleys and depleting 58 tanks in the area.<sup>17</sup>

**Bureau of Malariology:** The department of Malariology was created in the **Medical Colleges, and Lectures in Malariology** were given to the students Mysore, and Bangalore.

**Health Units:** In addition to the Krihnarajasagar Health Committee that was functioning, three more committees, the Sakrebyle Project Committee the Marconahalli and Nugu Committees were constituted. A systematic bi-annual spleen survey of all villages within the health unit areas was arranged during the year, 1947.<sup>18</sup> Malaria control works were continued in Maralvadi, Banavar, Taverekere, Tiptur, Kanagal, Thippagondanahalli, Princess Krishnajammanni Sanatorium, Jog, Sakleshpur, Koppa, Anandapuram, Sorab, Heggadadevankote, Mudigere, Mandya, Bhadravati, Belur and other places and in Bangalore and Mysore Cities. The schemes for Dugganahalli, Sowlanga and health units for Kadur District were sanctioned.<sup>19</sup>

**An itinerant dispensary,** with one Sub Assistant Surgeon & 4 compounders were working in Malaria affected villages in the remote areas.<sup>20</sup>

**Bureau of health Education** was established in the year **1930**. The primary function is to provide scientific knowledge to people about health problems and to bring about changes in life styles and risk factors of disease and create awareness of health needs problems through a programme of public health information. Propaganda by means of lectures on malaria was carried on in Kannada, Tulu and Tamil, the lectures being invariably given with the aid of moving picture films. An epidemic of fever in some villages of Kolar Taluk situated along the over- flow channels connecting the Polar series of tanks was investigated in June 1930. The staff of the unit visited 97 villages of the Periyapatna taluk.<sup>21</sup> Organized a large number of cinema shows. 5000 copies of leaflets, booklets, posters were distributed, and all prepared by the Department and were warning against diseases.<sup>22</sup>

### III. CONCLUSION

There was a marked decrease in the incidence of Malaria with this rapid implementation of the modern system of measures.

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<sup>17</sup> Administration Report of Mysore, 1945, p. 142-145. Divisional Archives Mysore.

<sup>18</sup> Administration Report of Mysore, 1947, p. 142. Divisional Archives Mysore.

<sup>19</sup> Administration Report of Mysore, 1947, p. 145. Divisional Archives Mysore.

<sup>20</sup> June 1939, Mysore Information Bulletin.

<sup>21</sup> Ibid

<sup>22</sup> Mysore Information Bulletin, July 1940.

