Part III
CHAPTER VII

SUMMARY AND CONCLUSION

7.1 Summary and Conclusion

The purpose of the study is to provide a clear picture on the spatial distribution of the diseases, particularly, Malaria and Leprosy in Manipur. The framework of this analysis is to signify one of the branches of geography namely the Geography of Health. In brief, the present study is the study of man and its environment in the context of health of the people in general.

The study area is exposed to various types of tropical and sub-tropical diseases. However, the scope of the present investigation is limited to the study of malaria and leprosy in Manipur which are most prevalent in the State. The antecedent behind selecting these diseases for the study is based on to the main hypothesis: (i) high incidence in the State is primarily due to its geo-ecological settings and (ii) recurrence of the two diseases. Between the two diseases malaria is found more prevalent in the context of present deteriorating environmental situation. Henceforth, more emphasis has been given to the study of malaria in the State.
The study has attempted to establish possible correlation between physical, biological, socio-cultural situation and the spatial distribution of the diseases.

The physical environments, such as climate, relief, soil, drainage, etc., play a vital role in the status of the general health conditions of the inhabitants. It is, with this view in mind, an attempt has been made to establish possible correlation of geographic factors, viz, relief, temperature, rainfall, humidity, etc. with the occurrence of the diseases. Besides, socio-cultural environment are also brought into the arena for detailed analysis.

The historical perspective is also focussed to trace the origin and perpetuation of the diseases in the State. Aetiology of the diseases are discussed with a brief review of the relevant works done by various scholars in different parts of the world.

As a geographer, emphasis is laid on the variable characters of the geo-ecology, pattern of distribution of the diseases and their plausible relationship with
natural and man-made environments. Attention has not been particularly focussed on patho-genesis as it lies in the domain of medical science.

Corresponding to varied physiographic settings of the State there are two major distinct demographic features between hills and plains. The density of population in the State varies widely due to physical and economic conditions. Imphal district has the highest density of population; 442 per km² much higher then the national average. Nearly 60 per cent of the population are concentrated only in the valley area which is composed of Imphal, Thoubal and Bishnupur districts. These districts also record higher incidence of malaria and leprosy. Hill areas are sparsely populated. It has a density of only 26 persons per km².

Illegal influx of immigrants from various parts of the Country and abroad, trespassing in important business centres including border areas, perhaps, contributes towards the phenomenal increase in population as well as in the distribution of diseases. Major centres where immigrants are concentrated exhibit higher incidence of
the contagious diseases and also has become important centres of malaria outbreak.

The sex-ratio of the State is 971 (1981) as against 930 of the Country. Lower sex-ratio in the urban areas has relation with the presence of significant number of working male population. The sex-ratio has also relationship with the general health of the people. By the nature of the works itself women are less exposed to the diseases. Therefore, low infection rate is visible among the female population.

The study also clearly testify that the geoecology controls the general health conditions and distribution of the diseases in the State. Further, it is also proved that the altitudinal factors control the distribution of malaria in the State. Temperature and rainfall significantly help in the incidence and propagation of malaria. Moreover, warm-humid swampy areas of the State are highly prone to malaria as well as leprosy.

The standard of living of the people in general except in town areas is very low, as reflected by their
income, housing conditions, sanitation, etc., it is only in the upper socio-economic classes who can afford the modern amenities seem to have better health and nutrition, but cannot totally escape from the maladies of degrading environment.

General housing pattern, house designs, housing materials, etc. also reflects the intensity of mosquito menace of a locality, whereby the people are exposed to the infection of this disease. There are many houses which are built in traditional designs. These houses are poorly ventilated. They always provide dark areas suitable for sheltering the mosquitoes. Housing does not only mean just the physical structure, but also the surrounding environment which has an impact on the physical and mental health of the residents, as well as the social well-being of the people. But in case of most of the rural houses their traditional maintenance is not congenial for healthy living.

Generally all the homesteads are encircled with ditch and drainages with stagnant water. These drains always contain polluted stagnant water filled up during
rains and flood and provide resting as well as breeding grounds of mosquitoes. The boundary fencing made of bushes and tall trees shade the water and provide congenial environment for the growth and proliferation of mosquito larvae.

In the rural housing patterns, the animal sheds and living rooms are clustered together. These animal sheds are not hygienically maintained. Besides, the building materials like bamboo and thatch, etc., always provide comfortable resting or hiding place for mosquitoes during day-time.

Endemidity of malaria in Manipur is studied with reference to the geo-ecological and socio-economic background. On the basis of the data from NMEP, Government of Manipur, the spatial distribution of malaria has been illustrated for a specific period, i.e., 1975-1987.

Distribution pattern of malaria for 1975-1987 show a fluctuating tendency in all the districts of Manipur. Imphal district, specially the urban belt has the highest incidence of malaria. From the degree of concentration
four zones have been identified, viz
(i) Imphal Valley,  (ii) Barak Valley,
(iii) Hilly areas, and (iv) Burma Border areas.

During the period under study, the spatial pattern of malaria distribution in the State as a whole records the highest incidence in 1978 and 1979 and two medium peaks incidence in 1980 and 1982. Since then it shows a gradual decline in the State as a whole. This is due to extension of medical facilities associated with the said eradication programmes.

Malarial mortality is almost nil. Reliable mortality rate from malaria infection are not available. However, the available records and information collected from different sources revealed that most of the patients died of secondary infection after major attack of malaria. In 1978 there were 75 deaths from malaria in the State.

Annual Parasite Index (API) for a span of twelve years have been taken into consideration and series of twelve maps were drawn to show the spatial pattern of probability zones. These maps easily located the important foci of incidence in the State.
The primary objective of this section is to identify the important foci of malaria incidence at the lowest administrative level. Generally, areas having more than 2 API are considered to be malaria prone and accordingly D.D.T. treatment cycle is determined.

From the sub-division-wise API figures it is clearly observed that a large part of the State is less prone to malaria. Among the sub-divisions Jiribam of Imphal district always show the highest API of above 20 API on an average. Besides Jiribam, Chandel, Tamenglong and border areas like Kamjong, Parbung and centres like T. Minou, Moreh, etc., are still prone to heavy malaria attack. The rest of the areas in the State are less vulnerable to fatal attack of the disease.

Leprosy is prevalent in the State at a rate of 0.3. It is widely distributed in different parts of Manipur. The highest incidence of leprosy is found in the valley areas. It has also been found that swampy, marshy and lake areas are very prone to leprosy incidence.
The highest incidence of leprosy was recorded in 1978 and 1979. After 1979 it shows a gradual decline in its incidence trend. Imphal district has got the highest peak in 1978 followed by Churachandpur and Chandel district.

There are many indigenous ways of treatment for malaria and leprosy. People use leaves and bark of a particular tree, locally known as "nongleisang" (Xylosma longifolium) as a means for malaria treatment. They boil the leaves and bark of the tree and drink the syrup. However, it is not yet scientifically tested. Using of "Uyum" (Salix tetrasperma) leaves for treatment of leprosy is mentioned in Chengleiron (ms.) which is believed to be written in 5th century A.D. Besides, for leprosy patients diets were restricted during the period of treatment and after. Patients were segregated and they were sent to remote places.

To achieve the expected target of eradication of the diseases the people's whole hearted involvement in the programmes is very much needed. Without people's participation malaria disease cannot be effectively controlled or eradicated. In this regard, besides direct
governmental efforts, the panchayets, school teachers, village voluntary organisation are involed in establishing drug distribution centres, fever treatment depot, etc, etc. remote areas. Public meetings and group discussions are conducted by medical advisors in presence of Pradhans and Upapradhans. This has dual purposes :— (I) to create awareness and (II) to procure co-operation in the effort of eradication. As a result many clubs and voluntary organisations have come forward to take responsibility at various level of the scheme.

Health education programmes are lunched through many demonstration camps, radio talks, displaying hoardings and malaria fortnight in collaboration with the P.H.Cs and M.Os. Mass-media techniques are arranged to educate the people. To put a check on the recurrence of malaria house to house spraying and laboratory services have been intensified. Likewise government has taken any possible steps for the eradication of laprosy too.