

# CHAPTER- I

## CHAPTER : I INTRODUCTION

One of the best experiences in leprosy work is to see that how many highly qualified and experienced people from various fields are willing to make their contribution towards freeing mankind from this scourge. An attempt is being made in the present research to understand the problem of leprosy from geographical point of view which will help the planners to understand this problem from the grass root level and enable better management of the leprosy eradication programmes.

It has now been established that leprosy is not the problem of an individual patient alone, but that of society at large. And if the severe losses due to leprosy are to be prevented, then this socio-medical problem needs to be tackled seriously with an integrated multi-disciplinary approach in which an active involvement of social scientists is very vital.

No serious thought could be given in earlier decades to the necessary social science inputs in achieving the objective of leprosy control. On the other hand the expected change in the outlook of society towards leprosy has not taken place to any appreciable extent, barring those areas where very good work with necessary social inputs has been achieved.

## 1.1 Leprosy and Medical Geography :

Basically medical geography is concerned not only with probing the cause and spread of disease but also with the nature of availability and consumption of health care delivery. These are explained by locational analysis and by synthesising the human and environmental phenomena over space and time. Along with this, recently geography of nutrition is also taken into consideration. Thus today medical geography is the analysis of human environmental relationship with disease ecology, nutrition and medical care system and the elucidation of this inter-relationship in space. For understanding the problem of disease incidence, diffusion, prevalence and control, there is an urgent need to go outside the human body and develop an alternative social and environmental perspective. In this respect therefore, the approaches of medical geography can play a major role.

In medical geography, disease studies can penetrate the problem to such a extent that it becomes possible to understand the role of host, agent, environmental and social factors which may be directly or indirectly contributing to the incidence of the disease. The growth of interest in geographical aspect of disease, nutrition and health care systems has evolved into a multidimensional repository of knowledge on spatial aspects of human health. Figure 1.1 gives the conceptual frame work on which the

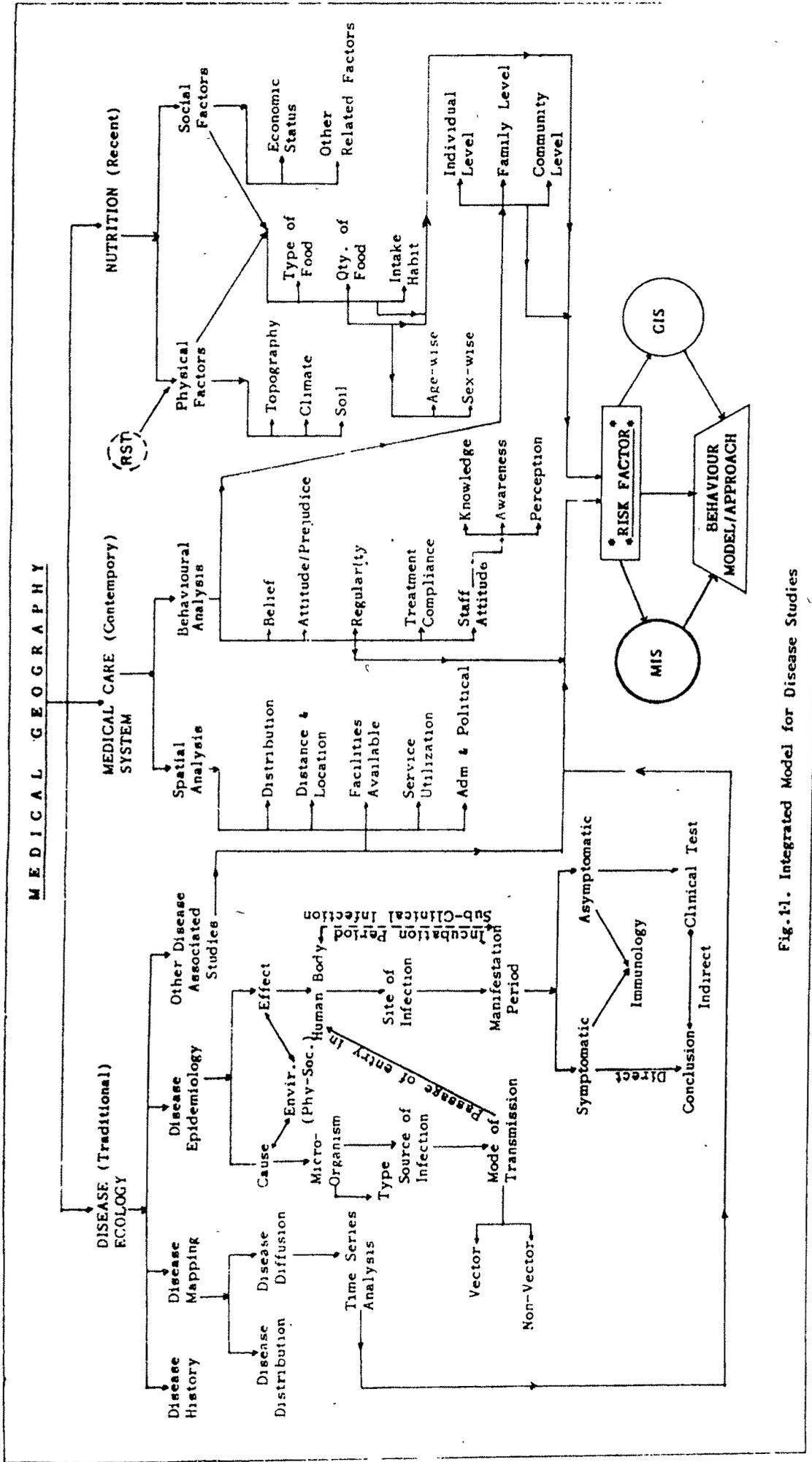


Fig.1.1. Integrated Model for Disease Studies

study of leprosy can be used. The various aspects of disease ecology that need to be probed are justified from the account on the epidemiology of the disease as discussed below with health care and nutrition.

1.2 Epidemiological Aspects of Leprosy : Leprosy is classified into two types, multibacillary (MB) and paucibacillary(PB). There are many gaps in our knowledge of the epidemiological aspects of leprosy. The role of insect vectors of the bacillus is still unproven. It is generally agreed that multibacillary cases are the most important sources of infection in the community. Besides this, the inapparent infections are also an important source of infection. The most common mode of entry of the leprosy bacilla into the body of the contact person is the inhalation of bacilla-laden droplets of nasal secretions of the affected patient. The inhaled bacilla may enter the respiratory tract and then move to site suitable for their multiplication. M.Leprae may also find its entry through broken skin. In general, as leprosy is only feebly infectious, close skin to skin contact is usually considered to be necessary for its transmission. But the time lapse between the entry of the lepra bacillus into the human body and the first clinical manifestation of the disease, i.e. the incubation period, is not exactly known. It generally ranges from three months to twenty years or more, the average being 2-3 years. In susceptible persons, even casual or short contact may cause the

disease. In most population, however, even after the leprosy bacilla enter the tissue, 90-95 percent of individual do not contract the disease because of their specific immune response or natural resistance to kill the invading organism. This proves that it is not a hereditary disease as often thought of. But there appears to exist a strong relationship between the cell mediated immunity of a person and contraction of the disease.

This susceptibility may be genetically determined. Americans, Europeans, Anglo Indians, Parsees, Burmese, Chinese and Japanese belong to the high susceptibility group and are more prone than Africans and Indians. Other host factors are age and sex. Although leprosy affects both sexes, males are generally more affected than females. Children are most susceptible at the age of 1 to 14, Incidence rates generally rise to a peak between 10 and 20 years of age and then fall. Besides this, the risk of transmission is predominantly controlled by environmental factors such as the presence of infectious cases in the neighbourhood. There is evidence that humidity favours the survival of *M. leprae* in the environment. *M. leprae* can remain viable in direct nasal secretions for at least nine days and in moist soil at room temperature for 46 days. Over crowding, lack of ventilation within the house, poor hygienic condition, poor diet and social factors governing close contact are other factors conducive to spread of the disease.

Currently there are two major problems which are still to be proved. Until recently man was considered to be the only host and source of infection. But now a days there is evidence that natural infection with M. Leprae is present in wild animals for eg: Armadillos, Mangabey monkey and Chimpanzee, it is not yet known if leprosy in wild animals is a threat to public health. Secondly, despite repeated claims, M. leprae has not yet been conclusively shown to grow in any artificial medium. It is perhaps mainly due to this reasons that progress in research has lagged behind that of many other diseases.

1.3 Health Care : The second or contemporary approach, that of the medical care system, is particularly important in the study of leprosy not only because this disease can kill or cripple, nor because it is highly contagious, but also because of the attendant of social stigma born out of wholly unfounded and irrational traditional beliefs about the disease. Thus leprosy patients face the threat of permanent and progressive physical and social disability. At different times and in different places, societies have had different attitude towards human environment interaction and this has affected their attitude towards medical practices as well. It is easy to see how the relationship of human with their environment affects disease. This relationship is also important in the development and utilisation of health care delivery. These two approaches of disease ecology and health

care, can best be integrated by geographers because of their training in locational analysis and in their ability to synthesise the human and environmental phenomena over space and time. Deformities are caused because of late reporting or by default cases which are generated due to social ostracism. So the importance of the ethnic factor cannot be ignored. Hence behavioural analysis must lay stress on multiple cultural matrix such as belief, attitude, prejudice, custom and tradition, regularity of treatment compliance and the constraints that societies set on the way in which treatment is provided. Besides this, the attitude, knowledge and perception of the leprosy staff can play major role in providing the necessary psychological and moral support. Besides clinical help, health care for leprosy requires the additional task of educating the masses regarding the disease, its causes and required measures to prevent its spread. This involves specialised training for the health workers. The entire behavioural analysis, therefore should be done at three levels, i.e., the individual, the family and the community levels. This would be more beneficial in predicting the possible consequences and the direction of spread of this disease.

1.4 Nutrition : The last and the most recent approach to the study of medical geography is nutrition which also has a direct link with the ecology of the disease and the medical care. Many geographical factors are involved in nutrition, among which

topography, climate and soil are very important. Climate affects the amount and nature of food available. Particular crops can only be grown under particular climate and soil condition. Thus, this has direct link with the food intake habit, the type of food used and the quantity utilized at all three levels. Although it is very difficult to analyse it at the individual level, the family and the community attitude towards diet gives an idea of the customs and tradition, economic conditions etc, which in turn can be linked with the body immune system. The immunity of the body with respect to diet can be the probable cause for the age and sexwise variations in the incidence of the disease.

**1.5 Relevance of present study :** The significance of the geographical approach has been examined through the present study which has been confined to a single district in Gujarat, Viz., Vadodara. Such associative analyses at the micro level, it is hoped, will allow for a more integrated approach towards tackling the problem of leprosy eradication.

**1.6 Chapterization :**

The study begins by explaining the relation between leprosy and medical geography in chapter one. The conceptual framework of the study, where in , the concepts of health, healthcare and leprosy are looked into and their inter-relations are analysed in chapter two.

Leprosy is one of the oldest diseases of mankind, which is believed to have originated from India and China. The historical evidence of the occurrence and spread of the disease have been dealt in chapter three. Chapter four gives the details of literature pertaining to various aspects of the study such as environmental, epidemiological and clinical and from various disciplines including geography, sociology and urban studies. Chapter five deals with the distribution of the disease not only at the state level but also at national and international levels. Chapter six explains the rationale for the study undertaken in the field of medical geography and attempts to make a statement of the problem and also gives the description of the study area.

Chapter seven gives the objectives and hypothesis and the methodology adopted for the present study while chapter eight gives the details about the disease 'Leprosy' in the Vadodara district. It also explains the distribution of disease in the urban environment. Besides this, it also explains ethnic, age and sex distribution of leprosy cases. Chapter nine explains the clinical features of leprosy. Although it does not fall within the purview of the subject matter of medical geography, some knowledge on various aspects of the disease becomes essential in order to be aware of the epidemiological conditions of the disease which may help in collecting and collating the necessary information. In chapter ten, an attempt has been made to highlight

how the physical factors are responsible for the endemicity of the disease in terms of location of the area by using the latest technology of remote sensing with meteorological details of the district.

Chapter eleven deals with social factors of the disease 'leprosy', which are somehow directly or indirectly responsible for the consequences of the disease while chapter twelve explains the problems associated with this disease. Thus a wide range of classification has been done for measuring knowledge, awareness and preception (KAP) taking psychological, socio-cultural and economic factors among sufferers, non-sufferers and leprosy medical and para-medical staff. Again and again the nutritional status of population has been considered a factor in the causation of leprosy. Chapter thirteen gives details about the nutritional habits of the sufferer and the non-sufferer and discusses the inferences drawn from the nutritional analysis. An attempt is made in chapter fourteen to trace the diffusion pattern of the disease within and among various talukas of the district as well as the neighbouring districts. Along with this, future prediction model of leprosy for Vadodara district is explained in details. Chapter fifteen gives the details about the findings and conclusions drawn from this study undertaken in Vadodara district together with recommendations for future studies to be conducted in this regard.