PREFACE

Medical geography is an essential area of health research. It is a hybrid discipline combining geography and medicine. The main concept of medical geography is that the place and environment influence health. While the practitioners of medicine are concerned with symptoms of ill-health, morbidity and mortality, medical geographers examine the spatial distribution of diseases at various geographic scales and correlate it with the associated social or physical environment to determine the factors contributing to the presence or absence of the illness. In addition, geographers provide spatial perspective of the disease with an effective tool namely a map showing the disease prevalent areas thereby making the job of the medical professionals somewhat easy to extend health care facilities into the vulnerable areas. Of late, the medical geographers are equipped with advanced techniques namely remote sensing and geographic information systems (GIS) for the implementation of effective health management in the inaccessible areas as well.

In order to demonstrate the significance of the understanding of spatial distribution of diseases, certain case studies such as Malaria and Filaria, the two significant endemic vector-borne diseases in Visakhapatnam and Vizianagaram districts of Andhra Pradesh State in India have been taken up in the present work. In addition, Lymphatic Filariasis, another endemic disease in Vizianagaram district has also been studied. Further, the case of Fluorosis disease in Nalgonda district is also analyzed in the study.
Data on the number of cases reported on each one of these diseases were collected from different sources. The spatiotemporal patterns in the spread of these diseases have been analyzed and the high-concentration zones and their repetitivity have been identified.

Using the remote sensing satellite images of the respective districts in conjunction with the various collateral data sources such as topographic maps, climatic and census records, thematic maps on physiography, soils, water bodies, rainfall, temperature, population distribution, etc., have been prepared. Maps on the spatial distribution of diseases are compared with various thematic maps using GIS techniques in order to correlate the disease prevalence with the geographical phenomena so that the spatial factors responsible for endemic nature of the respective diseases are brought out. In addition, location quotient analyses were also carried out to identify the intensity of the disease prevalence in certain geographical locations. Needless to mention, information on the spatial patterns of diseases and the physical factors that are responsible for the persistence of some diseases in certain geographical locations would be an important input to disease eradication programs.

The thesis is structured into the six chapters with Chapter 1 providing a detailed introduction to the relationships of diseases and geographical features and phenomena, a general account of the study area, i.e., Andhra Pradesh state and the selected diseases in selected districts analyzed, sources of data and the methods of study. Chapter 2 and Chapter 3 are
devoted to the spatiotemporal patterns and possible environmental conditions responsible for malaria prevalence in Visakhapatnam and Vizianagaram districts, respectively. Chapter 4 on the Filariasis in Vizianagaram district, especially in Vizianagaram town, and Chapter 5 on the problem of Fluorosis in Nalgonda district, particularly in Nalgonda Revenue Division highlights the causes of these diseases. Finally, Chapter 6 provides a summary of the present work and the major conclusions drawn out of the entire study.