



SOME IMPORTANT ASPECTS OF MEDICAL GEOGRAPHY AND ITS SCOPE WITH MAJOR FOCUS ON INDIA

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Abstract

One of the unique features of geography is that it is a multidisciplinary subject which covers several areas of study and hence is related with several other subjects and therefore leads to the development of a new branch or discipline because it explores both the physical properties of the earth surface and human societies spread across it and their interaction. One of such branches of geography is medical geography, a bridge between geography and medical science which is now growing at a rapid pace. This paper seeks to understand the origin and development of medical geography various studies and researches done in this field focussing India. It also focuses on the contributions of geographers to the field of medical science along with medical mapping of diseases done by applying various geographical techniques. Besides, it throws light on studying medical geography as an academic course along with the application of GIS (Geographical Information System). Overall the objective of the paper to highlight the importance and the need to include medical Geography in academic course of geography as its distinct branch for its expansion and development. The present journal is an attempt to promote the scholars to make their contribution in this field to benefit the human wellbeing across our environment.

Key words: *geography, health, disease, India, university*



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Introduction:

Wherever and whenever the question “how and why things vary across space” arises, the geographers are generally considered to utilise their perspectives to answer. Levels of health and disease vary across time and space which is a matter of concern in the field of geography that helps to understand the various geographic factors that affect the human health. Health geographers use the geographic tools and approaches to tackle such health related questions in a systematic way.

Medical geography also called Health geography is a branch of human geography as it considers the interaction between people and environment. It investigates spatial variation is responsible for health variation in the population. Medical geography is concerned with the analysis of spatial patterns of disease, health and health care provision. John M. Hunter famously defined the field as “the application of geographical concepts and techniques to

health-related problems.” This definition of geography is human-environment interaction through time and space and conceptualizes environmental influences.

Thus medical geography can be defined as the study that deals with geographic factors that are associated with and the geographic techniques, methods and perspectives to analyse diseases and health related issues.

Origin of Medical Geography and its development in India:

Medical geography is now growing at a rapid pace at world level. This is revealed in the increasing number of papers presented on this subject in the various international congresses in recent years. The study on this particular discipline was first initiated by non-geographers. The countries initially showing interest in the subject are USA(May),Britain(Learmonth, Geddes, Howe, Waddy),Germany(Jusatz)and particularly USSR (with a team of scientists headed by Ignat'yev).

In India the work still remains practically in its embryonic stage. Learmonth (1958) has done some fundamental works on the character and spatial pattern of a number of diseases in this country. In 1970 Misra correlated the general health of the Indians with the geoeconomic environment of the country.

Probably the first scientific attempt to identify the regional factors associated with the prevalence of diseases in India was made by McClelland. Later on Macnemara studied in detail the geographical factors influencing the occurrences of various diseases particularly goitre in the Himalayan and sub Himalayan regions.

The foundation of modern medical geography in India was laid down in 1930sbut it is still one of the most underdeveloped branches of geography in the country. A.M.V. Hesterlow was the first researcher who highlighted the possible relationship of environmental factors and diseases in southern India. Thereafter much work has been done on different aspects of medical geography of India by RaisAkhtar.He gave the data and the studies of professional medical workers which contain a wealth of information available for a systematic geographical analysis. These have been critically reviewed by Learmonth. He provided a scientific base to the researches in medical geography in India and till date almost all the work done by various scholars in the country has been inspired by his pioneering studies.

Several scholars of Aligarh Muslim University elucidated the problem of nutritional diseases in different in different parts of UP. Since then there has been a great enthusiasm particularly among young geographers to conduct field studies in medical geography in India.

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In 1981, the department of geography of the University of Madras held an international symposium on geography of health that helped the potential research scholars who contributed papers on aspects of disease ecology and health care in different regions of India. Up to early 2004 several papers were published on general disease ecology and on special health problems.

Even today also this area of research attracts scholars to give their contribution from time to time.

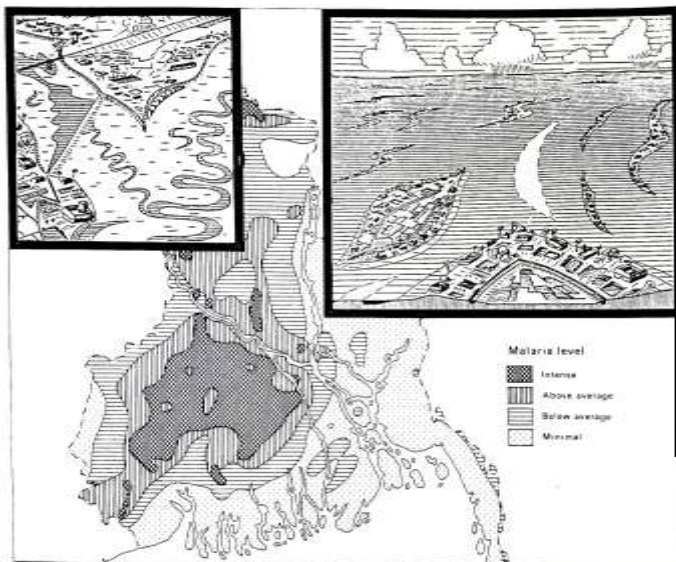
Some of the important books on Medical Geography in India:

- ❖ A book 'Geocology of Cholera in West Bengal' written by Bireswar Banerjee and Jayata Hazra is an important work where the various geographic aspects have been analysed in relation to a particular disease namely cholera in west Bengal with a special focus on Calcutta which is considered as the hub of cholera outbreaks. Since cholera is more frequent in Bengal and spreads out extensively because of its infectious nature, this particular disease has been selected for the analysis. This study was based on 3 principles: 1. collection of basic data, 2. their subsequent processing, 3. their analysis so as to bring out any possible correlation between the existing geosystem and the incidence and the incidence of the disease. Maps and diagrams drawn depict the general pattern and the behaviour of cholera in relation to the environmental set up of this state.
- ❖ Another book 'Rural India and Malnutrition: Implication, Problems And Prospects' written by Syed Sajid Hussain Zaidi (from Department of Geography, Natural Sciences and Technology, Jamia Millia Islamia University) which deals with the physical conditions of India along with its cropping, irrigation and food situation with special focus on specific rural lands. Also the micro level survey of upper part of the Ganga plain has been described along with the correlation of its people's diets and deficiency disease in various types of soils and concluded with suggestions for the betterment of rural health.
- ❖ 'Some Aspects of Medical Geography' by L. Dudley Stamp (social geographer from the university of London) where he discussed about climate and disease and health, and mapping of mortality and morbidity where the researchers designed the distribution of some specific diseases of different places including India, along with malaria distribution in west Bengal.

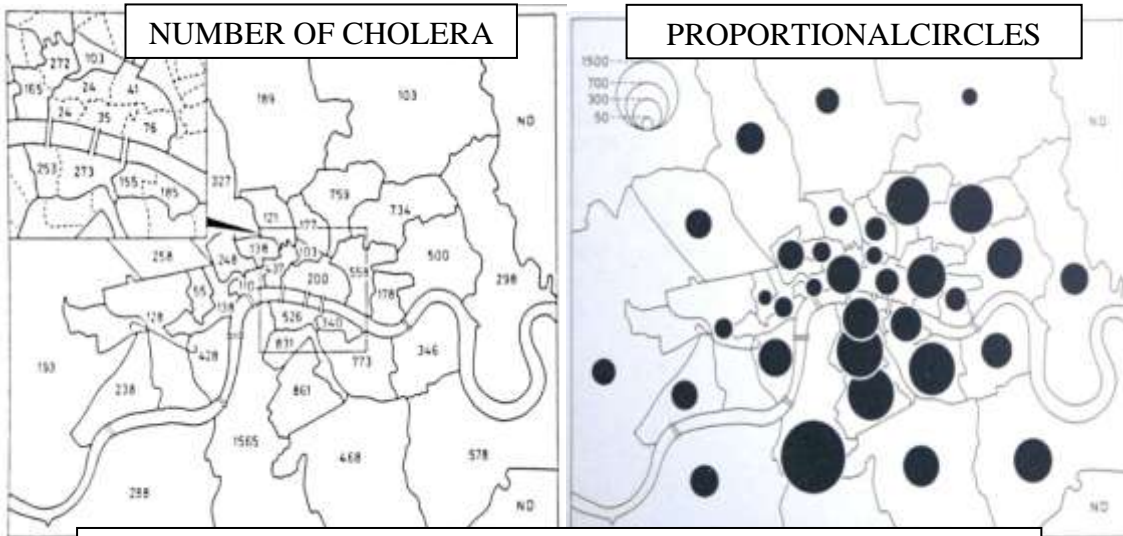
- ❖ 'Disease and urbanization' written by E.J. Clegg and J.P. Garlick, 1980. In this the book attention had been given to selected aspects disease ecology resolved into a series of urban/rural, temperate/tropical and affluent/poor. It is basically concerned with infectious disease in rural/tropical/poor societies and often with contrasted combination of chronic disease in urban/temperate/affluent positions.

Some of the Geographic techniques applied in disease mapping in Atlas of Disease Distribution:

MALARIA DISTRIBUTION IN BENGAL, 1913

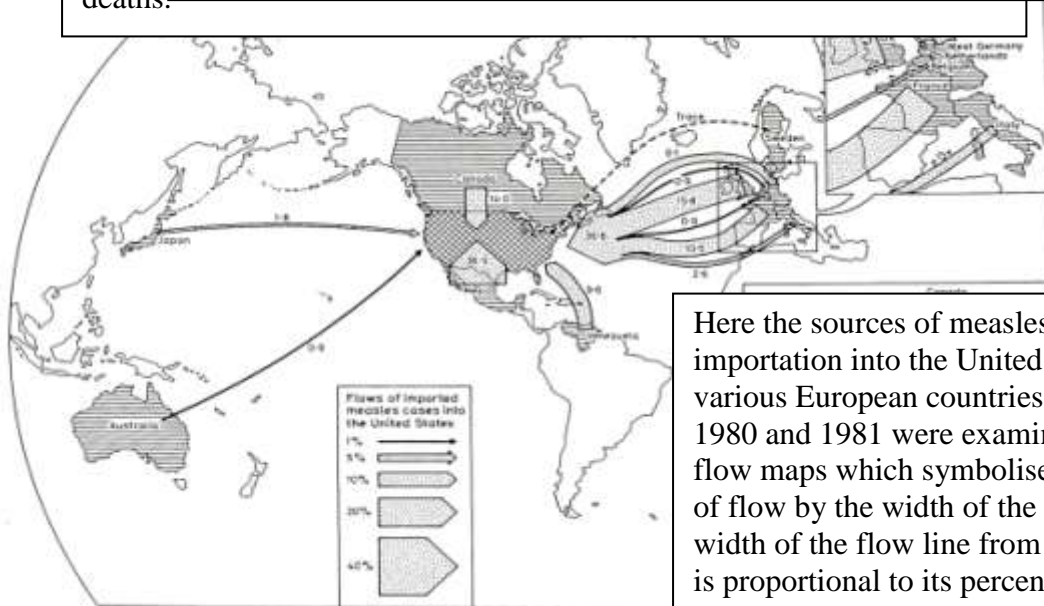


The given map shows the level of malaria in the Ganges delta in 1913 which is based upon maps in C.A. Bentley's 1916 report on malaria in Bengal where choropleth techniques have been applied.



The left side map shows the number of deaths from cholera occurring in each of the 34 districts of a metropolis in 1849 and in the map on the right side the technique of proportional map is used to show its spatial distribution where the size of the circles is chosen in such a way that the area of each circle is proportional to the number of deaths, i.e., the radii of

MEASLES IMPORTS INTO THE USA



Here the sources of measles importation into the United States from various European countries in the years 1980 and 1981 were examined using flow maps which symbolise the amount of flow by the width of the line. The width of the flow line from any country is proportional to its percentage share of the total number of measles cases in the United States which were attributed to external sources.

GIS Application:

As maps are used to analyse and describe spatial patterns in health, GIS is a great innovation that has a greater impact on the geographic study of health. The visual representation of maps

is significant in analysing health and disease data but GIS has provided much more sophisticated techniques to draw meaningful conclusions. The computing power of GIS enables the complex data manipulation and spatial data analysis much easier and more efficient to produce geographic models and test spatial hypotheses. The ability of GIS to link information on the basis of location has enabled and enhanced many geographic studies of health.

The use of GIS is expanding in healthcare and health research rapidly. The number of GIS users has increased exponentially over the last decade resulting in greater awareness of the ways GIS can be utilised in communicating information about geographic patterns of health, in mapping health care services, assessing physical access to healthcare by calculating distance between health facilities and health care users, enabling disease surveillance and evaluating links between the environment and the health. Most health research institutions now employ workforce who are trained in the analysis and operation of GIS. Health departments, hospitals and health organisations such as CDC and WHO have shown keen interest in using GIS for mapping and analysing health related data.

Importance:

Health issues such as the emergence of epidemic diseases, the potential influence of global warming on human health, and the chronic conditions on healthcare systems are of growing importance in an interconnected world of people and environment. A geographic approach to the study of health offers a critical perspective to these issues, considering how changing relationships between people and their environment influence human health. An introduction to the geography of health provides an access to this rapidly growing field covering theoretical and methodological background.

For instance, there are different kinds of diseases seen in different geographic environments; the occurrence of new disease is taking place due to various factors particularly that of climate change and extreme weather conditions. An in-depth knowledge is required for its prevention which can only be done by understanding geography of such diseases. A doctor alone without proper knowledge of geography of disease cannot be effective in prevention measures. Unless we don't find out associated geographic factors responsible for occurrence of any disease and put things together, we will not be able to get a grip on the situation. This has been revealed in the publication researches conducted and the books
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written where a particular disease had been studied in relation to its geographic that led to the occurrence of such disease has been factors. Besides, geographic techniques and methods to represent such facts, e.g., disease mapping particularly application of GIS have immense importance in the field of medical science.

Therefore medical geography is an important discipline in the field of health science to have a sound and healthy environment.

Geographic Approaches to the study of health:

Basically there are three approaches to study geography of health:

Ecological which focus on how natural and built environments affect human health. For example how irrigation projects have influenced the spread of waterborne diseases.

Social aspects considering the ways in which human health and wellbeing are influenced by social factors rather than biological factors. These factors include people's social status economic conditions, cultural norms, individual entities and other such factors.

Spatial focussing on the mapping techniques with the growing role of cartography and GIS in the study of health.

Medical geography in academic: its dearth in India:

In India it has been seen that not much work has been appeared in medical geography mainly because medical geographers are not confined to medical geography only. They basically shifted their field. Whereas most western geographers are confined to only medical geography and devote themselves completely for doing research in this field with full dedication. The reason being several universities in the western world offer formal courses in geography which India lacks. If someone is a physical geographer and shows interest in medical geography which is a branch of human geography, and makes studies and researches and writes papers on geographical perspectives of health and diseases obviously it will not be that much productive as compared to the one who has studied all its concepts from the very beginning.

In India hardly any university has been found to have medical geography in their curriculum. One of the universities that have been found is Aligarh Muslim University which offers post graduate course in health geography. The Geography Department of this university is the most prominent for the research in nutritional geography (one of the important aspects of medical geography) at which a number of doctoral dissertations were completed covering various geographic regions of Uttar Pradesh.

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Overall there is lack of teaching opportunities for medical geography in Indian universities which dissuaded many researchers from devoting their full time to this branch of geography. Therefore lack of teaching opportunities and discouragement has resulted in underdevelopment of this subject.

Scope for development of medical geography in India:

As we have studied the various aspects and importance of medical geography we also need to know why we need to to why we need to to have an idea that why there is requirement to study this and make its further development in India.

As we all know India is a land of diversity in both physical and socio-cultural aspects it has ample scope for the practice of medical geography. In the country there are wide geographic variations such as landform variation in terms of mountains, plateaus, plains; diverse climatic conditions in respect of humidity, dry, wet: along with cultural differences in terms of customs, traditions, diet and food habits. Man and environment are closely linked in complex relationships and so there are particularly wide range of diseases in India. The physical and cultural variations produce a number of diseases and influence the health of the people differently leading to different kinds of health problems and diseases particular to that environment.

In a society where rich and poor people, affluent localities and slums, developed regions and backward regions, and regions with availability and lack of resources exist together; inequality in medical and health care facilities are inevitable.

Here geographers can play a significant role by studying the geographic factors causing the occurrence of such diseases taking into account the climatic conditions, cropping patterns, distribution and consumption pattern of different food items in the area, diet of the people and so on and make use of their geographic approach in solution to these issues. This can be understood by the aforesaid mentioned books where the authors have correlated the health and disease with its associated geographic environment. Because this is something to do with space and wherever the spatial variation leads to occur something the geographers are expected to come forward and give their contribution; also it opens a new opportunity for solving the region specific problems. Here there is a wide scope for geographical investigation into the outbreak or occurrence of certain diseases and health related problems confined to particular areas or regions. Therefore it is clear that the scope of medical geography in India is immense.

Suggestions and recommendations:

As medical geography has been a fascinating area of research and has a plenty of scope to do further research, the Indian universities should take up some steps to introduce this as their teaching course in such a way that it enable the students to learn :

- All the basic concepts and aspects of that are widely studied.
- All the three geographic approaches (social, ecological and spatial) to the study of health with major emphasis on real-world applications of GIS for medical studies.
- Study of different types of diseases associated with different types of geographic factors (physical, economic and social).
- Distribution of health facilities and health care planning with regional inequalities.
- Ability to investigate health and disease problems to do productive research.
- Disease associated with urbanization with contrast to malnutrition in rural areas.

For this the universities should go through the teaching curriculum of this discipline from various universities all over the world where it has been already developed keeping in mind geographic variations in India. One of such universities is the University of Florida. The Department of Geography at the University of Florida offers a program in medical geography, complementing its existing strengths in human-environment studies and spatio-temporal analysis. It has strong ties with the Emerging Pathogens Institute (EPI), the College of Veterinary Medicine, the College of Public Health & Health Professions, and the Centre for African Studies, with many faculties jointly appointed. This program aims to develop skills in spatial thinking and hands-on experience for health applications. Students are prepared for positions in health agencies, non-governmental health organizations, medical research labs, and academic appointments at universities which motivate them in terms of employment opportunities.

Conclusion:

As medical geographers are gaining experience in health and health care all over the world, India should not lag behind and contributions from Indian geographers must emerge. Considering the growing application of geography in medical fields and immense scope and need for its development, the significance of this branch of geography cannot be avoided and should be given importance in our country. This cannot be done by doing only researches without studying its basic principles in academic course and so must be included in teaching curriculum of all the Indian universities along with the application GIS. Besides, there are

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wide employment opportunities after having sound knowledge of medical geography which should be recognised and provided in India. Therefore it is necessary to make the students aware of built up intellectually, socially and financially rewarding career of this field. This will encourage the geographers to come forward and devote full time to study this branch separately and to make investigations and researches in new topics which will in turn benefit the country and wellbeing of its people.

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