CHAPTER - I

## INTRODUCTION

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Health is one of the important aspects of man's life. Besides air, water, food and shelter, health is a basic need of man's day to day activities. Very rarely man enjoyes the sound health, all through the span of his life. The life support systems are those environmental conditions which are necessary to human life & hence the good health or bad health are related in different ways in different environmental conditions. There are several disciplines like public health, sociology and medicine which study the health of the people in one form or the other. Geography also deals with man's health. There are many geographical factors which influence & determine health of the individual and of society. Recently the separate branch of geography known as Medical Geography has come up which deals with health in relation to environment.

## 1.1 Importance of study of Medical Geography :

Medical geography is the scientific discipline, combining with medicine and geography. Many a times, this branch is known as geography of health, geography of diseases, geography of life and death, geographical pathology, medical ecology, geo-medicine, disease ecology and so on.

Medical geography considers disease as maladjustment to environment to which numerous factors contribute. Disease therefore, becomes an anthropological phenomenon with geographical distribution (Park & Park, 1979). The world health organization

has defined health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (Mishra R.P., 1970). The state of completness of health is relative term which varies from individual to individual depending upon the physiological character and impact of the environment in which the individual has settled.

Disease is a departure from the state of health. It makes the changes in living tissues which are essential for living being in particular condition of environment and hence disease is nothing but a temporary maladjustment between man and his environment (Pandurkar, 1981). As the environment creates the maladjustment in a state of health, it becomes major aspects for particular set of pattern of diseases in which individual resides and hence systematic study of incidence, proliferation and distribution of diseases in relation to environment becomes the main subject of medical geography.

It is true that genotypical (pathological) factors are fixed which cause the disease, while phenotypical factors which are variable in nature are the geographical factors which give rise to the pathological factors. Medical geography being a boarderline discipline between medicine and geography studies both i.e. geogens and pathogens. As geogens which determine the cause of disease are of vital importance to a researcher in the medicine field the pathogens are of importance to a medical

geographer. It is only because of this medical geographer has concentrated his attention on the geographical factors which are responsible for the distribution of diseases and the health conditions. Thus, medical geography deals with distribution of human diseases in relation to environment of individuals and of society.

## 1.2 Review of work done in medical geography :

The medical geography is as old as Hippocrates who has explained the relationship of environment and spread of diseases in his article entitled, "On Airs, Waters and Places". Man's physique is directly exposed to the environment and hence the relationship between environment and health of man would be a valuable study for a medical geographer. A medical geography being an interdisciplinary branch, neither geography nor medicine has done the study independantly. Realizing the importance of study of interdisciplinary nature, many foreign geographers like Audy J.R., Brownlea A.A., Howe G.M., Hunter J.M., Hyma B., Ignatyev, Learmonth A.T.A., Light R.U., May J.M., Mc-Glashan N.D., Murray M.A., Pyle G.F., Stamp L.D. and few others have shown deep interest in developing this branch of geography.

Medical geography is still in its infancy stage in India. Hesterlow A.M.V. (1929) was the first researcher who

studied the possible relationship of environmental factors and diseases in southern India. Prof.A.T.A. Learmonth has provided a scientific base to the researchers in medical geography in India and to date almost all the work done by various scholars in this country has been inspired by his pioneering studies (Learmonth 1957, 1958, 1965). The 21st Internationational Geographical Congress which was held at New Delhi in 1968, provided an encouraging opportunity to Indian medical geographers. After this congress Prof.R.P. Mishra (1970) has published a book, "Medical Geography of India" which has provided a systematic way for work to many geographers in India in understanding the general themes of medical geography. Dr.Bireshwar Bannerjee and Hazra (1974) have worked on "Geo-ecology of cholera in West Bengal", which is a useful addition to the literature in medical geography. Besides these, some research works have been published by the Indian Geographers. Dr.A.Ramesh with Dr.Hyma (1977) on the Geographical Distribution and Trends in Malaria incidences in Tamilnadu, Indrapal (1968) on Geographical Distribution of the Tranchoma in Rajasthan, Chavbey Kailash (1971) on Diseases of Sagar city, Dr.Shinde (1979) on medical facilities are some of the other researchers in this field. Dr.Pandurkar R.G. on the "Spatial Distribution of Some Diseases in Maharashtra", is a

detailed analysis of different diseases in a state at district level. However, so far a detailed analysis on different diseases in a rural area at tahsil level has not done by a geographer. Present study is an attempt in that direction.

The aforesaid account depicts that much of the work done in medical geography is in general at macro level and superficial. It is a proper time when the research should be made at micro level and in depth. It seems that in India, the research on rural medical geography has not done up to the mark. It feels that environmental problems occuring in rural areas are extremly different than those occuring in urban areas. Besides, very less attention has been paid in improving health status of rural life. These considerations have inspired the author to turn his attention to take up the research in this branch of Geography.

## 1.3 Choice of Region and Topic :

The author proposes to work on "Spatial distribution of diseases and health care facilities in rural areas of Kolhapur district". The author has selected the Kolhapur district with specific purpose. As the district covers jurisdication of Shivaji University, Kolhapur, it is very feasible to collect the data of different Public Health Centres. Kolhapur district, being the southern most district of central Maharashtra is



FIG. 1.1

located on Deccan plateau and is a part of Poona division of Maharashtra state (Map 1). The district has latitudinal extent of 15°43' N to 17°10' N and longitudinal extent of 73°40' E to 74°42' east, with an area of 80,470 sq.kms. and the population of the district is 2,506,330 per 1981 census. For the sake of administration, the district is divided into twelve tahsils namely,

1)	Karvir	2)	Hatkanagle	3)	Shirol
4)	Shahuwadi	5)	Panhala	6)	Gaganbawada
7)	Radhanagari	8)	Bhudargad	9)	Ajara
10)	Gadhinglaj	11)	Kagal	12)	Chandgad

The title of the topic proves that author has concentrated his attention only on rural areas of Kolhapur district and hence the study is made only of rural health services and distribution of diseases in the district. The rural population of Kolhapur district as per 1981 census is 1,884,308 which is 75.18% of total population. The author has excluded the urban health aspects entirely from the text. Secondly, major emphasis has lead on primary health centres (hereinafter called as P.H.C.) which are located in this district.

The following P.H.Cs are existing at present in Kolhapur district.

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Sr.No.	Tahsil	Sr.No.	Name of the P.H.C.
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1.	Shahuwadi	1)	Bhedasgaon
2.	Panhala	2)	Kale
3	Hatkanagle	3)	Pargaon
		4)	Herle
		5)	Pattan Kodoli
4.	Karvir	6)	Mudshingi
5.	Shirol	7)	Dattawad
6.	Kagal	8)	Pimpalgaon
7.	Radhanagari	9)	Rashivade
		10)	Solankur
8.	Bhudargad	11)	Kadgaon
9.	Ajara	12)	Uttur
10.	Gadhinglaj	13)	Nesari
11. 12.	Chandgad Gaganbavada	14)	Kowad -

As the part of tahsil of Gaganbavada has newly merged in Vaibhavwadi tahsil of Sindhudurga district, the Umbarde P.H.C. is not included in this study. Similarly, the Sangrul P.H.C. which was in Karvir tahsil has been closed since 1981, which is also not included in the study. At present the entire study is based on the rural areas of twelve tahsils and of fourteen primary health centres.



#### 1.4.A Objectives of study :

The specific objectives determined for the present study are as follows :-

- To map and analyse the spatial distribution of the selected diseases in relation to physico-socio-cultural environment in the rural areas of Kolhapur district.
- To study the pattern of spatial distribution of selected diseases in the areas covered by different primary health centres of Kolhapur district.
- 3) To study the existing patterns of distribution of medical facilities in the rural areas and to suggest the probable sites for the location of new P.H.C's in the Kolhapur district for future establishment.

#### 1.4.B Hypothesis :

It is logical to mention that the occurance of water borne infections diseases might be more in the rural areas as the physical factors might be more responsible than socio cultural factors. The impact of physical environment on the distribution of diseases might be in positive corelation in the areas under study. Secondly, it seems that in any region the distribution of medical facilities is uneven. This distribution of diseases is unproportional to the population to which they serve. Lion's share is always taken by urban areas and the rural areas are deprived of.

#### 1.4.C Methodology :

The author proposes to analyse the available data at two stages. Firstly the collection of the data will be made for the rural areas of each tahsil in Kolhapur district. Secondly, same type of data will be collected at P.H.C. level. The data so collected will be corelated with different physical and socio cultural variables (wherever available) for different selected diseases. As the data collected is for more than twenty years, it will be divided into two or three periods of time and the account will be given about the variations in the pattern of distribution within these periods. The data collected at P.H.C. level will be depicted with the help of different line graphs as the Choropleth method will not sorve the purpose. For the study of existing set up and working of the P.H.C's the reactions from the people who are benefited by those P.H.C's will be of much use. It is mainly because of this consideration, the field work has been undertaken by the researcher which will lead him to correct conclusion. The different interviews were arranged with the patients residing in a village in which the P.H.C. is located and the patients coming from the surrounding villages. The status and level of standard of service given by a particular P.H.C. can be well judged by studying the facilities and medical personnel available at that P.H.C.. Hence personal

interviews were arranged with the medical officers of particular P.H.C.. Generally more than 50 persons do visit the P.H.C. every day for the treatment, hence the researcher has conducted the interviews of some thirty patients of each P.H.C. and thus has made 60% sample studies of the patients.

## 1.5 Data Sources :

The major task of a medical geographer is to portray the information which is related to space and he has to prepare the distribution maps of morbidity and mortality. These maps are to be corelated with the environmental set up. For this, correct and reliable data are necessary. The researcher has collected the data from different primary and secondary sources. Vital statistics is the most important source. It is true that vital statistics of India does not collect detailed and realiable data. At third All India Sanitary Conference held in Lucknow, the British delegate regratefully stated that in India the only certain thing we know about vital statistics at present is that they are highly inaccurate. They are more inaccurate in some areas than in others. We do not know the extent of their inaccuracy, we can only guess (Chandrashaker S, 1972). The data collected from vital statistics is tahsilwise and of different diseases with age and sex differences and about the cause of diseases. Some of the information has also been

collected from district health office, Kolhapur. The primary health centre wise cause specific data have been collected from this office. Annual public health reports of Government of Maharashtra were of immense use for collecting tahsilwise rural data of mortality and morbidity. The secondary data have been tapped from the Gazetteers of Kolhapur district and from Assistant Director of health services of Kolhapur division. The census reports and the district statistical abstracts of Kolhapur for the period of 1962-1980 were the major sources from which health statistics of rural areas of Kolhapur district was collected.

The later part of the dissertation is mainly based on the data collected from fourteen P.H.C's located in this district This is the primary source of data and same have been collected with the help of interview technique. Three different interview schedules were prepared namely, (1) Interview schedule to be filled in by Medical Officer of concerned P.H.C. (Questionaire No.3). (2) Interview schedule to be filled in by patients visiting the P.H.C. and which are the residents of a village in which the P.H.C. is located (Questionaire No.2). (3) Interview schedule to be filled in by a patient visiting the P.H.C. but a resident of a village other than the P.H.C. village (Questionaire No.1) (Refer Appendix C, B & A).



The data so collected have been tabulated in concised form and has been analysed with the help of different statistical techniques and findings are noted at appropriate places in the text. The data so collected especially from secondary sources have been accepted without testing its reliability for obvious reason's for which researcher fully accepts his limitations.

The interviews conducted with the patients at P.H.C. may also show some fallacies. The researcher is aware of this fact. The person afflicted with a disease may not give correct information due to some personal reasons. It is a general tendancy to hide the real cause of disease from the society. Secondly, the interviews which were conducted of illiterate rural patients who were much reluctant to supply the correct information.

## 1.6 Proposed out line of work :

The entire text is divided into five chapters. Chapter I deals with importance of study, organisation, methodology and objectives of the problem. Chapter II, entitled "Environment and its effect on distribution of diseases", comprises of physical and socio-cultural factors which are responsible for the incidence, proliferation and distribution of different diseases in the rural areas of Kolhapur district. Certain physical factors have been

corelated with the mortality rates. Age, sex and litercy attributes have also been compared with male, female and infant mortality rates. For this, the researcher has selected some diseases separately for rural areas and for different selected P.H.Cs.

A) Diseases selected for studying the distributional patterns of rural area of Kolhapur district (The diseases are grouped according to international classification of diseases as prepared by World Health Organisation).

Sr.No.	Disease	I.C.D.No.	Short list number
1.	Cholera	000	Al
2.	Enteric Fever	001 - 003	A2 – A3
3.	Dysentery	004 - 006	A4
4.	Diarrhoea	008 <b>-</b> 0 <b>09</b>	A5
5.	Tuberculosis	010 - 019	A6 - A10
·6.	Leprosy	030	A14
7.	Diptheria	032	A15
8.	Tetanus	037	A20
9.	Small Pox	050	A24
10.	Measle	055	A25
11.	Jaundice (Infectious Hepatitis)	070	A28
12.	Malaria	084	A31

Group No.I : Infectious & Parasitic diseases.

Sr.No.	Disease	I.C.D.NO.	Short list number
13.	Heart disease <b>s</b>	393-438	A81 - A85
<u>Gr</u>	oup No.XVII : Acc	idents, Poisoni	ng & Violence.
14.	Accidents	E810-E823	AE138
15.	Snake-bite	E850-E877	AE140
16.	Rabies	E850-E877	AE140
17.	Suicide	E950-E959	AE147

Group No.VII : Diseases of Circulatory System.

(I.C.D. = International Classification Numbers by W.H.O.)

B) Diseases selected for studying the distributional pattern (P.H.C. wise).

Group No.I : Infectious & Parasitic diseases.

Sr.No.	Disease	I.C.D.NO.	Short list number
1.	Dysentery	004 - 006	 А4
2.	Diarrhoea	008 - 009	A5
3.	Tuberculosis	010 - 019	A6 - A10
4.	Tetanus	037	A20
5.	Measle	055	A25
6.	Jaundice (Infect- ious Hepatitis)	070	A28

Sr.No.	Disease	I.C.D.No.	Short list number
7.	Cancer	140-239	A45 - A61
Group	<u>No.IV</u> : Diseases o	of blood & bloo	od forming organs.
8.	Anaemia	280-285	A67
	<u>Group No.VII</u> : I	Diseases of Ci	rculatory system.
9.	Heart Diseases	393-438	A81 - A85
	<u>Group No.VIII</u> : I	Diseases of Re	spiratory system.
10.	Pneumonia	480-486	A91 - A92
11.	Astháma	490-493	A93
I.C.D. =	= Numbers given to Classification o	o diseases by i of disease.	International

# Group No.II : Malignant Neoplasm

Short List \_ List prepared & accepted by Indian Govt. for Number \_ collecting the disease data.

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Chapter III deals with spatio-temporal distribution of eleven diseases selected for 14 P.H.C's. The cause specific death rates have been calculated and same have been analysed in relation to physio-socio-cultural environment existing in a village in which the P.H.C. is located. The later part of this chapter deals with the analysis based on the interview schedules. Some of the recommandations have been solicited at the end of this chapter.

Chapter IV deals with the existing pattern of health care system of rural areas of Kolhapur district. Different ratios have been calculated and the analysis of optimum use of medical services has been made. The future planning of localization of new health care systems has been suggested and the analysis of utility of existing and suggested P.H.C's has been made in terms of population benefited by those services.

Chapter V deals with summary of the work done and general conclusion and suggestions made by the author.

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