CHAPTER: I
INTRODUCTION

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1.1 Introduction:

‘Health is wealth’. This is what we learnt from our elders since early childhood. This aphorism has been derived from the experiences of several millennia passed on and enriched from generation to generation. A person with poor health is often a liability to his family and society. A society burdened with unhealthy people cannot be prosperous. Health is really the wealth. Healthy people use their wealth most judiciously.

Poverty and poor health are interrelated. Poverty leads to under-and mal-nutrition. This, in turn leads to attack of diseases. A sick person cannot work hard. So his income declines, and low income means that the person in question cannot get medical attention nor can he get good food. His health further deteriorates. Poverty-low purchasing power-malnutrition-attack of diseases-low working capacity-still lower income constitute a circular chain reaction without any beginning or end, otherwise known as vicious circle. It applies not only to individuals but also to communities and nations (Mishra, 2007).

The basic food patterns followed by our ancestors have been largely adequate as is evident from the very fact that man has survived for so many centuries. But as a result of modern innovations resulting from technology and urbanization, food patterns have changed and often these changes have been for the worst. The sharp increase in the world population and shortage of foods such as milk and meat, the poor man does not get in adequate quantities the good foods he is willing to eat resulting in an artificial restriction of his customary meal patterns.

“The levels of health and diseases vary between places and over time. At present there is a pronounced awareness of importance of understanding the geographic aspects of human health. This awareness is
a part of an overall attempt within the discipline of geography to strengthen conceptual horizons. It is part of the research for a broader scope which has evolved over past twenty five years from mere descriptive to process oriented explanations” (Akthar, 1982).

The best resource of a community is its people, because it is the population which determines and controls the use of the physical resource. The community will prosper if the people are well-educated, well-fed and optimum health. It will not prosper if its people are circumscribed by taboos and ignorance of centuries, unable to adapt to the limitation of their environment, ill fed, and in ill health. Although it is an over simplification to say that food alone makes the difference, yet one can see that the individual by being well fed, is helped to achieve that state of health which enables him to play a responsible role in society. Every culture has its own dietary patterns based on the use of varied sources of food such as cereals, legumes, vegetables, fruits, nuts, milk, meat, fish, poultry and eggs. In some cultures, the use of animal foods may be taboo whereas in other groups such as the Eskimos and hunting tribes, the diet may consist predominantly of meat and fish.

For the balanced development of a region, it seems highly significant to assess the poverty level; the caloric and nutritional availability, and deficiency related diseases so that may come to the surface. This will help in having a sound and proper health planning problem since long but no satisfactory and complete answer yet been proposed.

Medical geography is an inter-disciplinary subject covering the sciences of geography and medicine. It deals with the spatial distribution
of diseases and their correlation with the natural, biotic and cultural environment. (Hazra & Banerjee, 1979)

The World Health Organization (WHO) has defined health broadly (1946) as “Health is a state of complete physical, mental and social well being and not merely the absence of disease or disease infirmity.” Later it was amplified to include “Socially and economically productive life”. This definition has been accepted by all the members of the WHO.

The major determinant of human health is the quality and quantity of food produced and available for human consumption. Under and malnutrition are the status developed due to food deficiency. To meet the basic needs like food, sufficient income is necessary. Most people in the developing countries do not have access to the basic needs.

The study of nutrition and nutritional deficiency diseases focuses the light on reliable education of food deficit situation for rational food planning of the region. Regional food planning is the base of regional planning in the region, while, health of society is the foundation of any development of region. National availability reveals that actual food available for human consumption in an area at a given point of time. It needs distinction from the food intake or food consumption. This term refers to the per capita net food availability for human consumption is always express in terms of available quantity of the food nutrients. House condition, clothing, literacy are also used to explain nutritional status (Dandekar, 1981).

Widespread malnutrition is largely a result of dietary inadequacy and unhealthy lifestyles. Other contributing factors are poor purchasing power, faulty feeding habits, large family size, frequent infections, poor health care, inadequate sanitation and low agricultural production.
Population living in the backward and drought-prone rural areas and urban slums, and those belonging to the socially backward groups like scheduled castes and tribal communities are highly susceptible to under-nutrition. Similarly, landless labourers and destitutes are also at a higher risk.

1.2 Selection of the Topic and Study Region:

Geography of health and nutrition is a new branch in the field of geography. A few geographers have been contributed in the discipline of medical geography. A systematic and scientific analysis at micro level region has been found neglected by various geographers. Nutritional deficiency is common everywhere in rural areas, because of habit, customs, beliefs, superstitions, ignorance and economic condition of the people. Most of the scheduled caste and scheduled tribes population groups are isolated from general population and economically disadvantaged. Nutritional deficiency is a serious problem in the rural areas of Maharashtra. Geographical isolation, primary agricultural practices, socio-cultural taboos, poor health seeking behavior, poverty, poor nutritional level etc. lead to the development of various morbidities and under-nutrition. Therefore, to measure nutritional status scheduled caste and scheduled tribe communities in rural areas, Jalgaon district is selected as a study area. Geographically, this region is unique not only in terms of relief, social, economic and culture but also diet customs and food habits.

The Jalgaon district, which is one of the 36 districts of Maharashtra lies between 20° N and 21° N latitudes and 74° 55' E and 76° 28' E longitudes (Map 1.1). The total area of the district is 11765.00 sq. km.
JALGAON DISTRICT
LOCATION OF PHC REGION

Source: PHC Jalgaon District
Map No. 1.2
According to 2011 Census data, the total population of district is 42,29,917 persons including 21,97,365 males and 20,32,552 females. The district comprises 15 tehsils, 1519 villages and 77 primary health centres (Map 1.2).

In the study region, proportion of scheduled castes (3.89 lakh) and scheduled tribes (6.04 lakh) accounts for 9.20 percent and 14.28 percent respectively of the total population. In the Maharashtra state their share comes to 11.81 percent and 9.35 percent respectively. About 68.77 percent of scheduled caste and 88.86 percent of scheduled tribes lives in rural areas of Jalgaon district.

The Satpuda upland in the north and Ajanta hills and Chalisgaon plateau in the south has demarcated the study region. In between these physiographic units, valley basins and residual hills are significant. Piedmont plain stretches east-west direction which is inhabited by scheduled tribe population while piedmont plain area is inhabited by rich cultivators. Along the bank of Tapi and its tributaries, settlements having high proportion of Scheduled caste population are settled. This scenario is observed in the Ajanta ranges and along the southern tributaries of Tapi. The main purpose of the study is to determine the variations in food diet and nutritional diseases patterns in relation with subsistence food available in the study region.

1.3 Significance of the Study:

For the balanced development of a region, it seems highly significant to assess the poverty level; the caloric and nutritional availability, and deficiency related diseases so that may come to the surface. This will help in having a sound and proper health planning problem since long but no satisfactory and complete answer yet been proposed. A few studies have been carried out in the developing countries
including India related to the health and nutrition shows that malnutrition is the major concern in the backward communities. In the light of above the present study will help to understand the nutritional status of tribal and scheduled caste communities of the Jalgaon district.

1.4 Review of the Work Literature:

Medical geography has very long history of development. In the ancient period of time in fourth century B.C. Hippocrates mentioned the importance of air, water and location factors on the health status of any region. He also discussed the role of water qualities as they are differ from one another in taste and weight and occurrence of various diseases. Among the ancient Greeks, Hippocrates was probably the first medical geographer who analyzed the spatial pattern of diseases in a temporal framework considering the physical factors. After industrial revolution taken place during the 19th century in Europe more attention has been given by the geographers towards the medical geography. Because of industrial revolution level of air, water, land pollution increased and responsible for the degradation of the environment consequently affects on the human health. At the same time world population has been increased at a rapid space leading to change in the environment. It is seen that medical geography has its roots since the ancient period of time and can be seen in the work of Hippocrates. Evidences about the contribution in medical geography of ancient thinkers are also available. We can get more reliable information from religious and literary works, which mention the diseases prevalent at the time they were written or compiled. Chinese, Indian and Greek literatures mention a number of diseases like leprosy, tuberculosis, injuries etc. The ancient Indian thinkers like Susruta (1500-1000 B.C.), Charak (100 B.C.), Bhel (700 A.D.) and others have described the regional patterns of various diseases. During the
medieval period Arab and Greek geographers have contributed for the development of the subject during the medieval period. They spread the knowledge about the effects of their surroundings on diseases.

Jacques May’s outstanding researches in the ecology of diseases removed the brake imposed by the emphasis on the germ theory. In the last few decades, a number of publications on medical geography have appeared, especially in UK, the USA, West Germany, Belgium, Japan, India and Australia. Substantial contributions to medical geography has been made by some scholars form U.K. largely on disease ecology like Learmonth’s (1988) work on disease ecology. Protherot’s (1965) work on migrants and malaria in Nigeria and elsewhere, and Howe’s (1963) on environmental factors and cancer other diseases in Britain as well as his National Atlas of Disease mortality in the United Kingdom. Armstrong’s (1977) work on cancer, Hunder’s (1966) on disease diffusion and river blindness, Pyle’s (1971) on heart diseases, cancer and stroke in Chicago, and Fonaroff’s (1968) work on malaria are landmarks in the systematic development of medical geography. Scholars such as Shannon and Dever (1974), Erickson (1970), Morrill and Erickson (1968), Joseph and Phillips (1984), and Massam (1980) have made very notable contributions to the health care geography and have given new directions on disease ecology. In Australia, Arthur Brownlea (1971) and N. D. McGlashan (1972) are making substantial contributions in this field.

1.4.1 Indian Context

As stated earlier medical geography started very early in India but the progress has been much delayed. Contribution has been made by some geographers before fifties they include Hesterlow (1929) made an attempt to study causes of diseases in south India. The work on population and health status was done by Gedde (1942). The subject
picked up the momentum during fifties. A. T. A. Learmonth conducted extensive study on Geomedical approach by analyzing twenty years data along with mapping of the diseases. This study is called as scientific study in the field of medical geography.

Remarkable contribution has been made by the Indian geographers in the past seventy years. The prominent medical geographer includes Akhtar who did study on various health aspects like disease intensity of goiter, malaria and cancer. Akhtar also worked on environment agriculture and nutrition. Indra Pal, A. K. Tiwari and H. S. Mathur individually or in collaboration made notable contributions in the field of medical geography. In 1966 the 21st International Geographical Congress, was held in New Delhi provided the best platform to the Indian medical geographers to contribute and present their studies on various aspects of medical geography. There after systematic study of various components of medical geography appeared.

1.4.2 Geography of Health and Nutrition

The Geography of Health and Nutrition has attracted more geographers to contribute in the field since long. Patwardhan (1952) has conducted comprehensive study on the nutrition levels of Indian population. Learmonth (1956-57) provided scientific base to the subject with preparation of maps of calories and protein in poor Indian diet. He also analyzed the quality in respect of nutritive value of average diet of an Indian and brought to lime light the poor quality of Indian foods in terms of proteins and low availability calories thus leading to unbalanced diet resulting in ill health. Shafi (1967) did comparative study of the efficiency of food production and the availability of nutrition in the form of caloric values in India. He also prepared maps showing the distribution of standard nutritional units in India. Hussain (1969) has been studied
nutritional deficiency diseases in Budaun and Shahjahanpur district of Uttar Pradesh. *Siddiqui (1971)* has carried out the nutritional research and discussed the problem of under-nutrition and identified deficiency diseases in relation to environment in Uttar Pradesh. He has ranked the diseases into three categories according to severity of disease. He has also located such areas in Uttar Pradesh where these deficiency diseases are encountered. *Choubey (1971)* has discussed the major diseases of Sagar City in the light of environmental nutritional deficiency factors, which occurred due to degradation of environment and mal-nutrition. *Farooqi and Khan (1972)* made study on daily diet and analyzed the low available calories in the diet of the rural population in Ganga-Yamuna Doab. The main focus of the study was on the deficiency diseases associated with vitamin A deficiency. *Misra (1972)* made projections for the growth of population and has calculated the estimated food grain in India upto 2000 AD, and worked out the levels of nutrition in India. *Chouridule (1973)* has been carried the work on nutrition and deficiency diseases in the Bagh basin of Maharashtra. *Nilofar Izhar (1978)* computed availability of Standard Nutrition Units based on food production in different districts of western UP. *Akhtar (1980)* brought out a book entitled Environment, Agricultural and Nutrition in the Kumaon Region. The focus of the book is to measure the availability of food and levels of nutrition in the Kumaon region. He has also studied the incidence of deficiency diseases because of both mal-nutrition and under nutrition. *Aya Ram (1980)* has detected anemic population in the below five years of age group in the village of Kolar. Both geographers and other social scientists and nutritionists have also carried out numerous other studies on nutrition with geographic perspectives. *Choubey and Tiwari (1983)* have been carried out the study on problems of nutritional deficiencies in rural areas of Rewa plateau in Madhya Pradesh. *Chitra
Sejwar (1986) undertook a comprehensive study on the geography of nutrition in Moradabad district of Uttar Pradesh. She described relationship with nutrition and soil fertility status of the area. Akhtar (1989) has studied the nutritional and dietary systems in a village of Karimganj. He also edited a book in which environmental degradations and their adverse effects on human health and quality of food have been brought to limelight. The book suggests guidelines for research methodology on various themes of medical geography. Misra (1989) presented paper on Regional Disparities in Protein Availability in Madhya Pradesh. The study indicates that the State as a whole is deficient in the protein availability in comparison to the recommended requirement. Nasir and Fatima (1990) have been carried out distributional pattern of vitamins obtained from food crops in Uttar Pradesh. Chaudhari (2001) carried out the study on nutritional status and Spatio-Epidemiological aspects of deficiency diseases in the tribal area of western satpuda region. Alizad (2005) has studied nutritional status and deficiency diseases in the tribal areas of western satpura region (India). In the study he concluded that the socio economic condition of tribal people is poor. Consequently there conditions hamper overall nutritional status of the people adversely. Gavakare (2010) carried out the study on population and food system in Solapur district of Maharashtra. He analyzed the availability, requirement, and surplus or deficit of food in the region understudy. Dhanshri Shinde (2012) made a study on of Nutritional Status of Population in South Konkan Region of Maharashtra. The main objective of this study is to evaluate the nutritional status of population, tehsilwise, based on chemical composition of the food consumed by people in the region. This is supplemented by analyzing the gender and rural-urban differential of nutritional deficiency from the RDA.
1.5 Aim and Objectives:

The aim of the present work is to assess the nutritional status and nutritional deficiency diseases in the scheduled caste and scheduled tribe communities of the Jalgaon district. To achieve this aim of the study following objectives are kept in mind.

1. To study the spatial distributional pattern of food crops in the study region.
2. To assess the availability of food and nutrition in the rural areas.
3. To estimate the nutrient intake, adequacy and consumption pattern.
4. To assess the land capability of the study region.
5. To find out the causes and pattern of deficiency diseases.
6. To suggest the planning directives and preventive measures for the balanced diet of target groups.

1.6 Hypotheses:

1. Poverty, ignorance and cropping pattern are the important parameters to assess nutritional status of the population.
2. Socio-economic backwardness of Scheduled Caste and Scheduled Tribe population is the cause of nutritional deficiency diseases.

1.7 Data Base:

A very comprehensive information on items like geographical facts of the area, major crops grown and food consumed, food habits and nutritional requirements of the inhabitants, nutritional value of the major food crops grown in the area, common diseases caused by malnutrition has been gathered to fulfill the objectives of the present study. The details of the data and their sources are as under…
i. Population data, proportion of scheduled caste and scheduled tribe have been obtained from Census data 2001 and 2011. Information regarding the various geographical facts i.e. terrain, climate, soil, hydrology and extent of the study area have been obtained from Topographical Maps published by the Survey of India.

ii. Data regarding the general land use, area under different crops (2011-12) have been collected from T.F. 20 record of revenue and Agricultural departments of respective tehsil of the study region.

iii. Agricultural productivity of different crops has been obtained from the Jalgaon district Social and Economical Statistical Abstract, 2013.

iv. The data related to malnutrition and common nutritional deficiency diseases have been collected from all seventy-seven primary health centres of the district and sample field survey of the study region.

v. Nutritional requirement of the population has been recorded from the manual on ‘Dietary Guideline for Indians 2010’ published by National Institute of Nutrition, Hyderabad.

vi. Nutritional values of the major crops grown in the area have been collected from “The Nutritive Value of Indian Food and Planning of Satisfactory Diets” published by National Institute of Nutrition, Hyderabad.

vii. Food habits of the inhabitants have been studied with the help of structured questionnaire and door to door survey in the district to assess the food habit, nutritional status, deficiency diseases etc.

viii. The present study is based upon primary data pertaining to food habits and deficiency diseases. Therefore, sample data have been collected from 10 percent PHC’s selecting 10 percent villages from selected PHC’s having high proportion of scheduled caste and scheduled tribe population. Random sampling method has been
used considering physiographic and economic factors of the study region.

1.8 Methodology:

1.8.1 Tools:

Following tools were used for different purposes of the study…

i. To analyze such voluminous data, MS Excel and MS Access (DBMS) softwares are used.

ii. To prepare various maps Auto CAD Map and Arc GIS softwares have been used.

iii. The present research work is largely based on primary data regarding food habits and nutritional status, considering the nature of work structured questionnaire was designed for sample survey.

1.8.2 Techniques:

Following cartographic and statistical techniques are used in the present study to precise conclusions.

i. Primary health centre (PHC) region wise maps are prepared and distribution of various factors has been shown using choropleth method.

ii. Concentration of scheduled caste and scheduled tribe population is calculated by using concentration index method and displayed through maps.

iii. Maps showing concentration of scheduled caste and scheduled tribe population, physiography, relief, drainage, soil, cropping pattern, occupational structure and nutritional status etc. have been prepared.
iv. Per head per day availability of food stuffs like jowar, bajra, wheat, corn and pulses etc. has been find out and shown through PHC wise choropleth maps.

v. To assess the land capability of the study region nutritional and caloric density index has been calculated with the help of following formulas and PHC wise distribution has been shown in choropleth maps.

\[ Nutritional Density = \frac{Total\ Population\ of\ Village\ 'A'}{Total\ Cultivated\ Area\ of\ Village\ 'A'} \]

\[ Caloric Density = \frac{Total\ Population\ of\ Village\ 'A'}{Total\ Food\ Crop\ Area\ of\ Village\ 'A'} \]

vi. Percent departure of per head per day food nutrient consumption from standard requirements has been calculated and shown through maps.

vii. PHC wise Disease Intensity rate per 1000 and per 100000 population has been calculated and display through the choropleth maps.

viii. Morbidity index for all nutritional deficiency diseases occurred in the study regions has been calculated using following formula and visualize through the maps.

\[ MI = \frac{OC}{EC} \times 100 \]

Where, MI= Morbidity index, OC= Observed cases and EC= Expected cases

ix. Percent departure of food stuff from balanced diet in sample villages of different physiographic regions has been calculated.

x. PHC wise food factor per head per day consumption has been calculated through the sample village survey.
xi. Average per head per day food consumption in gm in sample villages of different physiographic regions of the district has been calculated.

xii. Observations made during the field survey have been correlated while explaining the facts and figures regarding food availability and consumption and disease intensity.

1.9 Shortcomings:

Data regarding nutritional deficiency diseases have been collected from seventy-seven PHC’s located in the Jalgaon district. However there are a number of other government and private sector hospitals treating the nutritional deficiency diseases but they are largely located in the urban areas. The present study is limited to the rural area population. Further the disease data have not been maintained caste wise. The researcher is fully aware of the limitations of the data.

In view of the limitations regarding data it is pointed out that, it is not possible to present exact scenario of disease incidence among the scheduled caste and scheduled tribe population of the study region but the aim of the present study is to discuss the pattern of nutritional diseases.

1.10 Design of the Work:

In view of the objectives mentioned above the present study is designed into to nine chapters as follows:

The chapter one is the introductory one, which covers nature and scope of the geography of health and nutrition. It also includes the review of the work done in the subject, objectives of the present study, methodology and selection of study area.

The second chapter has been designed to present geographical personality of the study area. It includes the physiographic condition, soil
types, climatic condition, natural vegetation, drainage and transportation system in the study region.

The third chapter explains the demographic characteristics in terms of density of population, literacy, sex ratio, proportion of cultivators and proportion of agricultural labours in the study region.

The fourth chapter shows the demographic profile of scheduled caste and scheduled tribe population in Jalgaon district. It includes spatial distribution, concentration, sex ratio, density, literacy rate of scheduled caste and scheduled tribe population of the study region.

The chapter fifth is concerned with the general land use and spatial distribution of food crops like jowar, bajra, wheat, corn and pulses in the study region.

The sixth chapter focuses on nutritional status of the population of the study region. In this chapter per head availability of different food crops are shown. Further nutritional and caloric density of the study area is calculated with some statistical techniques.

The seventh chapter examines health behavior of the people. Nutritional deficiency diseases identified in the study region are discussed. Common symptoms of nutritional deficiency diseases are also discussed in this chapter. PHC wise spatial distribution of nutritional diseases is shown with the help of various maps.

The eighth chapter is based on the intensive field work done in selected villages and compared the availability of foodstuffs and actual consumption among the people in sample villages.

The ninth chapter deals with the conclusion of the study. Suggestions have been made about the existing and projected requirements for better health of scheduled caste and scheduled tribe population.
REFERENCES:


