CHAPTER I

INTRODUCTION
India is a country of villages and about 80% of the population live in the villages in India. The income rate is very low and about half of the population is below the poverty line. Most of the surveys indicate that most of the people get food less than their requirement. It is recognised that malnutrition prevalent among the poor socio-economic groups of our population is largely attributed to economic factors. The economic condition of a vast majority of our population is so poor that they are not in a position to afford even the least expensive balanced diets. However, it cannot be defined that social and cultural factors also contribute significantly to the overall picture of malnutrition in our poor communities. Faulty feeding habits arising from ignorance, superstitions and wrong food beliefs must be considered to be responsible for aggravating malnutrition in such communities. The most vulnerable segment of population from the nutritional stand point are infants and young children, and it is, therefore, not surprising that P C M (Protein calorie malnutrition) in children belonging to the poor socio-economic classes come under major public health problems in our country. A rapidly growing population creates intense economic strain on a country and in such condition if food supply becomes inadequate; people will suffer primarily from malnutrition. Nutritional deficiency is one of the serious problems in rural areas comprising mostly infants in weaning and post weaning periods and in the pre-school children.
Food, the main source of nutrients such as protein, energy, carbohydrates, vitamins, fat, minerals etc. It is indispensable for health at all stages of life for satisfactory growth of an individual. It not only satisfies one's hunger but also symbolizes one's social status. Food habits do not mean by selecting, combining, cooking and consuming foods; it is rather the psychological, emotional and the social values of food. While income, food availability, production and distribution influence the food preferences, religion, customs, traditions dictate its utilization by an individual as a cultural human being. So, the relation of people with food produced by the individuals and social factors result in malnutrition. Malnutrition is not an isolated biological phenomenon, but a part of going social process. In the current usage malnutrition is an impairment by health and physiological function resulting from the failure of an individual to obtain all the essential nutrients in proper proportion and balanced manner. Now-a-days protein, calorie malnutrition is one of the major public health problems especially in the different poorer sections of the community. Tribals are not the exception.

FOOD NUTRITION AND HEALTH PROBLEMS

There is an overall shortage of foodstuffs in our country. The present average per capita availability of food amounts to 2000 calories and 50 g of protein coupled by uneven distribution of food-stuffs among different regions. This has caused nutritional deficiency particularly in rural areas, restricting physical and mental growth. The most affected are the infants
in weaning and post-weaning periods followed by the pregnant and lactating mothers in rural areas.

As compared to the American children, 90 per cent Indian children possess heights and weights below tenth percentile values in corresponding age group. The extent of malnutrition in our country is clearly visible from a survey which shows that 18 per cent of our children are suffering from Grade III malnutrition, 65 per cent from Grade II and 14 per cent from Grade I malnutrition. This has caused nearly one million children in our country to die every year.

In addition, such severe malnutrition has caused health problems like blindness (Vitamin A deficiency), infants being born with low-birth weights, anaemia etc.

Developing countries are particularly confronted with the problems of malnutrition because of its man prevalence. Therefore, the need of the hour is to precisely estimate the extent of these problems, their causes and their solutions. This is because of rapid industrialization, changes in the way of life and patterns of expenditure; the food intake quantity and quality is bound to be affected. Food consumption levels of different socio-economic groups of community, local, regional and national levels have to be assessed.

IMPORTANCE OF NUTRITION

Nutrition is one of the components in building human body. It is the science of nourishing the body by the intake of food that is eaten and the way in which the body uses it. It is
the indispensable factor closely associated with the physical and mental development of young children. That is why nutrition plays an important role in the development of the quality that helps achievement of a high level of public health through a nutritious and balanced diet. A rapidly growing population has created a intense economic strain on the developing countries and the food supply has become inadequate making the people suffer primarily from malnutrition. Health and nutrition are interrelated. Many researches have indicated that nutritional disorder during the crucial period of early childhood leads to growth retardation and this might produce residual effects in later years. Therefore, the assessment of nutritional situation of rural people and growth pattern of young children in different geographic units and across socio-economic sections of the community becomes the first step for estimating their nutritional needs. Such an assessment will help in identifying the target groups which need planned intervention for improvement of nutritional status.

PREVIOUS WORK

In many of such studies and researches the searchers have tried to correlate the food production with the nutritional level of the people. Geography can make its own contribution by conducting surveys in landuse and deficiency diseases.

Geographers have recently taken interest towards this subject. Pioneering work by Prof. Shafi (1960) who selected 12 villages typical of different soil areas in Eastern Uttar Pradesh and on the basis of personal enquiries into fields,
prepared food balance sheets to assess the caloric intake per capita per day. Ayyar (1968) has made an attempt to workout an indirect relationship between landuse and nutritional status in three selected villages of Bewas Basin. They have pointed out the difficulty in the collection of dietary data and has recommended conduct of such surveys on a family basis. The work on the nutrition and deficiency diseases in relation to environment in U.P. was carried out by Siddiqui (1972) and Mohammad Ali (1978) who analysed the situation of agricultural food and nutrition in India. Akhtar (1980) conducted field studies on the impact of the environment on the levels of nutrition in Kumaon region. Agrawal (1986) has attempted the study the problem of child nutrition in ten selected villages of Haryana.

During 1960 Medical Geography in India appears to have become strongly established in the North. For example work on Cancer (Indrapal, 1956, 1972); Yellow water in parts of U.P. (Indrapal, 1968) have emerged from the north-western school, located at Jaipur. In Bengal work on cholera incidence gained greater importance (Sen, 1957; Basu, 1969) and goitre was widely studied in the Kumaon region and Maharashtra on a geo-medical basis (Akhtar, 1980; Krishnmachari, 1974) with regard to Cholera in the latter part of the 1970s.

Cultural factors and social customs influence not only the occurrence of diseases as indicated by the studies of the incidence of deficiency diseases but also the acceptance of community and family planning methods. Learmonth and Akhtar (1972)
have examined the effects of cultural patterns on health and
diseases, stressing how the health risk element posed by cultural
conditioning may be controlled. The work of Mathur and John
(1954) on the role of beliefs as a factor in Small Pox and other
infectious diseases in Southern India are the prime examples of
such studies.

For the first time in All India Seminar on Tribal Ecosystem
and malnutrition was organized at Pachmarhi in 1989 by Dr. P.D.
Tiwari. Some of the papers presented in the Seminar need special
references, e.g., (1) Changing natural conditions, food habits and
problems of malnutrition of Korku Tribals by Asha Patil. (2) Food
Consumption pattern and nutritional status of Kamaras of Raipur
by Prof. Singhrol and Mitra. (3) Food and nutritional status of
Maharashtra Bhil tribals by Prof. Shinde. (4) Tribal Food system
and nutritional intake in Mandra District by Dr. Katre. (5)
Nutritional problems - ecological aspects and planning in regard
to tribals of West Bengal by M. Chattopadhyaya.

Recently Dr. P.D. Tiwari has edited an important book
entitled "Dietary Habits in Tribal India".

Based on direct and indirect methods of assessment, the
prevalence of P C M has been identified as the most important and
wide spread method for the assessment of nutrition problems in
India. Chatterjee (1976) has estimated the prevalence of P C M
in children of 1 to 5 years is around 70 - 90 per cent of the
standard weight. Several other studies have also identified a
relationship between P C M and the incidence of several infectious
and nutritional diseases (Aykroyd, 1971; Rao et al., 1974). On the basis of least cost balanced diets proposed by I C M R, the prevailing extent of malnutrition in India was assessed in a nation wide nutrition survey for pre-school children (Azad, 1975). In assessing the nutritional status, the above works clearly indicate mass prevalence of malnutrition among pre-school children from poor families.

The above mentioned works have been written chiefly in the form of research articles. In addition the author particularly wishes to refer a Ph.D. Thesis entitled "Ecosystem, Food consumption, nutritional and Health Status of Baiga tribe in Eastern Mandla (Misra, 1991, Dr. H.S. Gour Vishwavidyalaya, Sagar) which successfully evaluates the impact of ecosystem on food habits and consumption pattern. It not only correlates the nutritional deficiency with malnutrition and diseases but also suggests suitable measures for malnutritional and health planning. There are several studies directed towards the solutions of the malnutrition problem in India. For implementation of the suggestions, programmes directed to nutrition education. Family Planning maternal and child welfare, fortification and supplementation of children's food and augmenting food production are generally recommended. The findings of the above studies reveal various attributes of the malnutrition problem in India. However, to get a comprehensive understanding to explore new areas of research, and to broaden the conceptualization, an appraisal of some gaps in the nutrition research in India seems essential. It may be made clear that these are not only gaps needing attention; these may vary from one researcher to the other, depending upon the
disciplinary background and purpose of the study.

OBJECTIVE OF STUDY

In general researches and articles are based either on urban problems or on rural problems. Programmes, suggestions and directives in such works are mostly based on secondary data. In the present study the author has made an attempt to put forward his findings based on primary data of the rural area. The data has been collected from individuals by personal contact and is more intimate findings. The author realised the necessity of comparative study of tribal and non-tribal peoples. The area of study selected has certain remote areas with a 90 per cent population or more of tribals and 90 per cent population or more non-tribals. Being a domicile of Madhya Pradesh it was desirable to select the field of research and put forward the findings for implementation and welfare of the surroundings. Research work on tribal communities is also insignificant. Thus it was felt proper to investigate the food stuffs available, the relative problems of malnutrition particularly among tribals and non-tribal people of the study area.

The main objectives of the proposed study are as follows:

(1) To trace out the different geographical factors which influence the food habits and food consumption pattern.

(2) To assess the food consumption and nutritional status and their determinants.

(3) To suggest measures for improvement of health and nutrition status.
To make a comparative study of dietary habits of the tribals and non-tribals.

To correlate nutritional deficiency with malnutrition and diseases.

To assist the Government in the implementation of the recommendations emerging from this study.

To suggest suitable measures for nutritional and health planning.

AREA UNDER STUDY

Plate 1 shows the Chhindwara district, the area under study, in Jabalpur division, is situated on the Satpura plateau in the south central part of the Madhya Pradesh and lies between Latitude 21°28' and 22°49' N and Longitude 79°10' and 79°24' E. It covers an area of 11815 Km². It extends from the Nagpur plain of Maharashtra in the north. It is bounded by Betul and Hoshangabad districts in the west, Narsinghpur district in the north, Seoni district in the east and Nagpur and Amravati districts of Maharashtra in the south.

There are 1913 villages in the district; out of which 22 (1.15%) selected villages have been treated as the basic unit for the present study (Plate 2).

METHODOLOGY

The proposed study depends basically on extensive field work, data for various environmental conditions, land use, cropping pattern, production pattern, forest produce and other agricultural data collected through various Government Offices. Field survey
conducted to get the first hand informations in various sample villages such as (1) Food survey or Diet survey, (2) Nutritional problems, (3) Growth status and (4) Collection of relevant back-ground informations.

The questionnaire was prepared through the above four survey works. The following are the sample schedules used in survey.

(1) Environment conditions schedule,
(2) Family economic schedule,
(3) Socio-cultural environment schedule,
(4) Diet survey schedule (Oral Questionnaire/Weighment),
(5) Nutritional assessment schedule.
   (Appendices A to E).

SAMPLING PROCEDURE

The main object of the statistical sampling is to obtain representative samples of the rural population as far as possible from each stratum, so that the data collection regarding the dietary intake and nutritional status closely reflects the situation as it exists in overall population. Multi-state stratified random sampling procedure has been adopted to obtain the relevant informations. For survey two types of villages were selected (Tribal and non-tribal villages). In tribal villages about 90.0 per cent or more people are tribals while in non-tribal villages about 90.0 per cent or more people are non-tribals. Each block was selected on the basis of the stratified random sampling method. Selection of families has been based upon different
communities, occupations and economic conditions. From twenty two villages 500 samples were taken, data analysis has been made on the basis of data, information and techniques published by the National Institute of Nutrition ( I C M R ), Hyderabad.

METHOD OF DATA COLLECTION

The diet survey of 220 families ( Ten families from each village ) from twenty two villages was done. Diet survey of 60 per cent families out of total was made by oral questionnaire method and of 40.0 per cent families by weighment method. In oral questionnaire, diet survey, the quantity of food items taken the previous day was noted. In weighment method, weight was taken in the morning of the raw food items to be cooked for mid day (lunch) meal and in the afternoon the raw food items to be cooked for supper. Besides households survey, economic and socio-cultural surveys were also made of selected families. A careful clinical examination of 440 children ( C to 5 years and two children from each family ) was conducted and whatever diseases diagnosed were marked ( \checkmark ) in schedule. Under anthropometric measurement; weight, height fatfold and arm circumferences were measured. A detailed information of selected villages under village schedule was noted, analysed on the basis of method propagated by N I N Hyderabad ( I C M R ) and by different statistical methods. Afterwards regional and economic disparities were shown by different cartographic techniques.
SELECTION OF VILLAGES

Twenty two villages namely: Panth & Boriya (Chhindwara Block), Anjanpur and Sajwa (Harrai Block), Saliwada and Hingpani (Amarwara Block), Rajthari and Jamuniya Khurd (Tamia Block), Sonapipree and Charaikalan (Parasia Block), Machhera and Temni Kalan (Mohkher Block), Majiyapar and Ulhavadi (Bichhua Block), Singnna and Pipriyalakkha (Chourai Block), Bargabodi and Jam (Sausar Block), Ambada Khurd and Deorkhapa (Pandurana Block - Plate 2) were selected through random sampling method. The detailed information with regard to population and other amenities of the selected villages is given in Table - 1.1.

PLAN OF THE WORK

The present study has been divided into eight chapters. Chapter 1st is the introductory part and deals with definition of nutrition, problems of nutrition importance of study, previous work, aim of study and methodology. A detailed geographical environment of the study area is given in Chapter IIInd having two parts: (a) Physical environment and (b) Cultural environment and deals with physiography, drainage, geology, climate, soil, populating transportation assessibility etc. A detailed explanation about definition of food, classification of food, function of food, nutritive value of food, food procurement and preservation, agencies of food supply, food restrictions are given in chapter IIIrd. Food habits or dietary habits, food requirements, balanced diet, essential elements of diet, dietary habits in different groups are presented in Chapter IVth. The food consump-
<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of Villages</th>
<th>Name of Block</th>
<th>No. of Total Households</th>
<th>Total Population</th>
<th>Tribal Population</th>
<th>Percentage of Tribal Population</th>
<th>Amenities</th>
<th>Nearest Town and Distance (in Km.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Panth*</td>
<td>Chhindwara</td>
<td>22</td>
<td>141</td>
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<td>2.</td>
<td>Boriya</td>
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<td>860</td>
<td>23</td>
<td>2.67</td>
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<td>-5 Km. Chhindwara 3</td>
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<td>3.</td>
<td>Anjanpur*</td>
<td>Harrai</td>
<td>26</td>
<td>150</td>
<td>150</td>
<td>100.00</td>
<td>-5 Km.</td>
<td>-5 Km. Amarwada 43</td>
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<td>4.</td>
<td>Sajwa</td>
<td>Harrai</td>
<td>63</td>
<td>499</td>
<td>34</td>
<td>6.81</td>
<td>-5 to 10</td>
<td>-5 to 10 Amarwada 46</td>
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<tr>
<td>5.</td>
<td>Saliwada*</td>
<td>Amarwada</td>
<td>36</td>
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<td>226</td>
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<td>6.</td>
<td>Hingpani</td>
<td>Amarwada</td>
<td>77</td>
<td>402</td>
<td>-</td>
<td>-</td>
<td>-5 to 10</td>
<td>-5 to 10 Amarwada 9</td>
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<tr>
<td>7.</td>
<td>Rajthari*</td>
<td>Tamia</td>
<td>76</td>
<td>457</td>
<td>420</td>
<td>91.90</td>
<td>-5 Km.</td>
<td>-5 Km. Chikhali-16</td>
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<td>8.</td>
<td>Jamuniya Khurd*</td>
<td>Tamia</td>
<td>55</td>
<td>307</td>
<td>268</td>
<td>87.29</td>
<td>-5 Km.</td>
<td>-5 Km. Chikhali-18</td>
</tr>
<tr>
<td>9.</td>
<td>Sonapipree*</td>
<td>Parasia</td>
<td>85</td>
<td>500</td>
<td>427</td>
<td>85.40</td>
<td>-5 to 10</td>
<td>-5 to 10 Parasia 8</td>
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<td>10.</td>
<td>Chirai Kalan</td>
<td>Parasia</td>
<td>98</td>
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<td>13</td>
<td>1.81</td>
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<td>11.</td>
<td>Sagoniya*</td>
<td>Jamai</td>
<td>72</td>
<td>505</td>
<td>505</td>
<td>100.00</td>
<td>-5 to 10</td>
<td>1 5 to 10 Jamai 6</td>
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<td>12.</td>
<td>Khajrifula</td>
<td>Jamai</td>
<td>43</td>
<td>251</td>
<td>4</td>
<td>1.59</td>
<td>-5 to 10</td>
<td>-5 to 10 Jamai 5</td>
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<td>Machhera*</td>
<td>Mohkher</td>
<td>153</td>
<td>800</td>
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<td>15.</td>
<td>Majiyapar*</td>
<td>Bichua</td>
<td>58</td>
<td>319</td>
<td>283</td>
<td>88.71</td>
<td>-5 to 10</td>
<td>-5 to 10 Sausar 33</td>
</tr>
<tr>
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<td>Ulhavadi</td>
<td>Bichua</td>
<td>160</td>
<td>983</td>
<td>42</td>
<td>4.27</td>
<td>-5 Km.</td>
<td>-5 Km. Chhindwara 61</td>
</tr>
<tr>
<td>17.</td>
<td>Singna*</td>
<td>Chourai</td>
<td>23</td>
<td>152</td>
<td>116</td>
<td>75.81</td>
<td>-5 to 10</td>
<td>-5 to 10 Chourai 10</td>
</tr>
<tr>
<td>18.</td>
<td>Pipariyalakka*</td>
<td>Chourai</td>
<td>112</td>
<td>580</td>
<td>35</td>
<td>6.03</td>
<td>-5 Km.</td>
<td>-5 Km. Chourai 2</td>
</tr>
<tr>
<td>19.</td>
<td>Bargobodi*</td>
<td>Sausar</td>
<td>63</td>
<td>319</td>
<td>283</td>
<td>88.71</td>
<td>-5 Km.</td>
<td>-5 Km. Sausar 2</td>
</tr>
<tr>
<td>20.</td>
<td>Jam</td>
<td>Sausar</td>
<td>115</td>
<td>569</td>
<td>54</td>
<td>9.49</td>
<td>-5 Km.</td>
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<tr>
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<td>Ambada Khurd*</td>
<td>Pandurna</td>
<td>95</td>
<td>442</td>
<td>385</td>
<td>87.10</td>
<td>-5 Km.</td>
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</tr>
<tr>
<td>22.</td>
<td>Deorhapa*</td>
<td>Pandurna</td>
<td>108</td>
<td>586</td>
<td>50</td>
<td>8.53</td>
<td>-5 Km.</td>
<td>-5 Km. Pandurna 3</td>
</tr>
</tbody>
</table>

*Tribal Villages.

Source: District Census Hand Book of Chhindwara, 1981.
tion pattern of the study area are discussed in Chapter Vth. Nutrients intake pattern is described in Chapter VIIth.

Nutritional status is explained in Chapter VIIth. The deficiency diseases are discussed where in various diseases which come under nutritional assessment schedule are analysed. Different malnutrition grades are also discussed in this chapter.

The last chapter deals with the concluding part of the thesis with the Nutritional planning and some suggestions for better nutrition of the people.

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