

**AVAILABILITY AND UTILIZATION OF HEALTH CARE FACILITY
IN MIZORAM: A GEOGRAPHICAL ANALYSIS**

Abstract

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**SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT OF
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1. Mizoram, an isolated hilly state in the North-eastern corner of India, epitomizes striking unique conditions wherein the rapid development in social sphere is not much in keeping with the development in economic sphere. It is true that the dissected hilly condition, geographical isolation and poor natural resource endowment imposed severe restrictions to the establishment of profit making industries. The terrain condition too is not conducive to the development of large scale agri-business. As such, among the states of India, Mizoram is one of the most economically backward states. Conversely, social indicators such as, literacy rate and urbanization placed the state amongst the most better off states in the country. This contradiction notwithstanding, the present problem assumes nuances of meanings as far as the health care provision and its utilization is concerned.

Given the inherent economic backwardness which apparently stifles changes; either socially or economically, one wonders as to how the pace of development in social sector could be very rapid in this isolated hilly region. One would never arrive at any satisfactory explanation for such contradictory situation without reference to the various events that the region had experienced in the historic past, which however is reflected in each and every sphere of the social life and attitudes of the people. Contact with Europeans and the introduction of education as a means of religious instruction since the late 19th Century paved the way for a rapid transformation of Mizo society from its exclusive tribal way of living to the more modern living styles.

Until the advent of the British, the Mizo had no written language; hitherto unwritten Lushai language was reduced to writing since barely a hundred and ten years ago in 1895 by a pioneer Missionary. The Mizos' receptivity to the newly introduced

formal education was quite remarkable; Mizoram's high literacy rate today may be cited as the direct outcome. While economic backwardness has been a stifling force for the people of this region, the continuation of tribal values, ethnic homogeneity and above all the ingenuity of the Mizo people have all been responsible for quick diffusion of whatever social or economic changes take place. In matters of socio-economic changes and diffusion, both social and spatial, one hardly notices the kind of structural impediments that characterize the people of many other regions of India where social change is confined to a few people leaving many others deprived, even ignorant of the changes. Every change, be it social, economic or technological, leaves the underprivileged even more underprivileged, the poor even more marginalized. Fortunately, Mizoram stands out as a rare exception to this rule.

Another striking uniqueness that characterized the state was during the period 1966 to 1986 when the Mizo National Front (MNF) led insurgent activity plunged this isolated region under serious turbulence for about three decades, disrupting the process of economic development that was taking place during that period. The relative isolation of the state in terms of geographical location and continuation of the government policy maintaining the state as part of restricted area both had limited any possible large scale immigration to have taken place from outside the state. This situation by and large enabled the Mizo's to maintain a fairly monolithic social structure within this isolated hilly state.

2. At this backdrop, the broad objectives of the present research were to analyze geographical patterns in the availability of health care delivery in Mizoram in its spatio-

temporal context; to assess the level of utilization of health care facility in different regions in Mizoram; and to explain regional imbalances if any, in the availability and utilization of health care facility.

The study assumes greater significance in light of the recent reawakening that health is a fundamental right and a world wide social goal. In terms of resource for socio-economic development, nothing can be considered of higher significance than the health of the people. The wide inequalities in the provision of health care facilities throw a challenge to social scientists, including geographers to utilize their respective approaches in the solution of problems pertaining to equity.

Given the context and the broad objectives of the research, following research questions were placed for obtaining an adequate answer: (a) is the available health facility adequate by national and regional standards, keeping in view the topographical constraints and the distribution of settlements in Mizoram? (b) whether response to the available health care facility is spatially uniform in its utilization level or is differentiated on account of institutional constraints? (c) Whether achievements in the field of literacy and urbanization get translated into a consciousness in availing of health facility or such achievements are independent of each other?

3. The study made use of data available from secondary sources. Efforts were made also to collect primary data at selected villages. Data published by successive Census of India, with regard to population density, rural urban population, settlement distribution and size, availability and accessibility of health facility; Handbook and Annual report, Morbidity and Health care related data published and maintained at Directorate of Health

Services, Health and Family Welfare Department Mizoram; Hospitals/Community Health Centres/ Primary Health Centres/ Subsidiary Health Centre Sub-Centres etc, records regarding facilities available and utilization of such facilities; morbidity data maintained at the Epidemiology Cell, Directorate of Health Services Mizoram, District CMO office Aizawl West, Aizawl East, Lunglei, Lawngtlai and Saiha; Malaria Eradication Programme (NVBDCP) section Mizoram; Registrar of Deaths and Births, Directorate of Economic & Statistics, Mizoram, records regarding causes of deaths constituted the main secondary sources of information which were cautiously but profitably utilized to arrive at the conclusions. Mention must however be made of the notoriously incomplete, inaccurate and unreliable nature of hospital records on disease related data which posed itself as a serious constraint if not a total impediment to arrive at meaningful conclusions. The analysis of the data based completely on secondary sources of data hence have to be read with caution, though in spite of the limitation, they did provide the only source for a macro understanding of the spatial patterns. The limitation of the secondary sources of data necessitated collection of data at the field level.

Primary data have been procured through questionnaire and interview of sample households located in rural areas in different eco-regions of Mizoram to elicit information on the patterns of utilization of modern health care facility and causes of their acceptability/non-accessibility of the available health facility. The studied villages have been chosen in such away as to represent villages located near urban centres and villages located comparatively far off from the urban centres. Purposive random sampling methods were used to select the villages while the households were selected on a random

basis. The field work was discontinuous and was completed in a period of 18 months beginning with the winter of 2002.

4. Since the study primarily aimed at evaluating the availability and utilization of health care facility in Mizoram in a geographical framework, the following methodology was used for conducting this research.

Attempt was made to assess the geographical patterning of the available health facilities in terms of location of such facilities at different levels of spatial aggregation such as the districts, and the Rural Development Blocks in order to examine spatial inequality, if any, in the provision of health care facility. The inequality factor was further probed by extending the analysis to accessibility constraint as represented by distance and terrain conditions as well as facilities such as road communication. Villages were classified into different categories in relation to physical accessibility to centres of health care facility.

The case of utilization of such facility was examined by a reference to health centres records for a period of one year divided into seasons. The seasonal variations in utilization are considered important as the climatic conditions often impose severe restrictions to the mobility of the people.

As information collected from the health centres are often restricted to age and sex and rarely include occupation, literacy level and economic background of those who utilized these services, information were gathered from a hundred outpatients awaiting medical checkup in Civil hospital Aizawl (the largest and the best equipped Government runs hospital in the state), Out Patient Department (OPD), in the form of short structured

questionnaire. The main purpose of this survey was to assess which section of the population utilized this facility. The distance covered, nature of illness, the literacy level and economic background of those who utilize these services were analyzed.

Morbidity data collected from health offices for major diseases were analysed in order to evaluate the efficacy of the available health care delivery system. In the absence of data for the lower aggregate levels except for malaria, six principal communicable diseases were mapped taking the districts as the lowest spatial unit and analyzed with an accent on temporal dimension.

The data collected from sample households located in five selected villages and the data procured from one hundred out-patients awaiting medical check up in Aizawl Civil Hospital OPD were analyzed to assess the availability and utilization of health care facility. Special emphasis was laid on gender, occupational and literacy background of the persons while scrutinizing their utilization of health care facility.

5. The manuscript of this thesis is organised into six broad chapters. The first chapter includes the design of research containing statement of the problem, definition and concepts, broad objectives, a brief note on the selection of the study area, basic research questions, data base and methodology and a detail review of researches on the field.

Chapter II provided a brief historical account of the growth and diffusion of modern health care facilities since its inception in the state. The chapter emphasises on the temporal dimension. While highlighting the introduction of modern health care in the State, distinction was made between the role of the Missionaries and the British Indian

Administration. Part of the attempt was to reflect how society's attitude towards health and health care changed over time. This chapter included an overview of the various health programmes implemented in the state.

The third Chapter analysed spatial inequalities in the provision of modern health care facility at different levels of spatial aggregation. Emphasis was laid on the pattern at the village level. Chapter IV made an attempt to understand regional patterns in the prevalence of major communicable diseases with an accent on temporal dimension at the aggregate level. A section of this chapter was devoted to discuss the most dramatic vector borne disease Malaria. In order to examine the efficacy of the available health care provision, morbidity and mortality data were correlated with the existing facility.

The fifth chapter analysed data collected at the village and household level to find explanation of the level of utilization of the existing health care facility and constraints in utilizing such facilities. The last chapter provides a summary of conclusions and an attempt has been made to give suggestions regarding health care delivery system based on the research findings.

6. With regard to the growth and diffusion of modern health care facilities in the state the following broad conclusions were drawn.

It was the British occupation and the advent of Christian missionaries which marked the beginning of modern health care facility in the state. Introduction of western education and health care completely broke down the Mizos traditional understanding of the causes of diseases and ailments which formerly was interwoven with their animistic world view. Two different agencies, namely, British Indian Administration (the

Government) and the Christian Missionaries were the precursor of health care facilities in the state. The contribution of the Missionaries in the field of both curative and preventive health care services in Mizoram was quite commendable. They were the ones who initially provided training in nursing and midwifery to the Mizos. It was the Missionaries who made concerted efforts to educate the general public on sanitation and hygiene through lectures and campaign.

Growth and modernization of health services took a new turn with the end of insurgency under the State Government in the form of infrastructural and Human Resource Development, availability of qualified persons in different discipline of specialties, up to date appliances for treatment and diagnosis of various diseases. Under the aegis of the Missionaries, particularly of the Welsh Mission, care has been taken so as to cover the entire regions lying under their jurisdiction in Mizoram. As such, apart from maintaining hospital at Durtlang, Aizawl, they have established health centres at four diverse distant villages, each about four to six days journey on foot from Aizawl so as to cater to the needs of maximum number of people. Conversely, the growth and diffusion of modern health centres under the government shows a rather striking imbalance in the regional patterning of such centres. In recent decades private firms too have begun to make investment in the field of health care. It is expected that such facilities run by private sectors would in the future make greater inroads into this state as social environment and needs by and large is conducive to the development of better health care services.

Quantitative growth and modernization of health care facilities at the state level do not necessarily lead to better utilization at the lower aggregate level, when factors like accessibility and spatial distribution are taken into consideration.

7. The study of spatial patterns in available health care delivery system in Mizoram led to the following broad generalization.

Inter-district variation in the availability of health-care facility in the state is found to be minimal. The districts which are better off in quantitative terms of available health care facility are not necessarily the district that are better served, when actual delivery potential is measured by Health facility and population ratio. Urbanization seems to be associated with better availability of health-care provision both at the district and block level. However, a close scrutiny at the village level data shows that many villages located near large urban centres are usually left un-served as far as the general absence of medical amenity within the village is concerned. This is an indication of the fact that urban centres are well endowed with health institution at the expense of the nearby rural settlements. Inter-block variation in health care facility reveals that highest disparity in terms of health care provision is recorded either by the blocks that are peripheral in their location or the blocks which contain entirely of rural population with the exception of few blocks.

The blocks lying in the eastern higher altitudinal zones of the state generally exhibit higher proportion of their villages served by health facilities. The lowest proportion of villages served by medical facilities is found to be located mainly in the western and southern most part of the state. While urban centres are relatively well

served, many of the nearby villages are left un-served even by Community Health Worker. It is not clear if such a situation is indeed a policy implication that villages close to urban centres need not be provided with better health care facility as people can avail the facility located in the nearby urban area.

There are glaring instances of inequalities in the geographical patterning of the location of health centres at the villages of the blocks. It has been found that while a group of clustered villages do not have even a health centre, villages of the same size close to each other are found each having a health centre. Constraints associated with distance from the nearest health centres are relatively higher for those villages located in the western lower altitudinal zone of the state close to Bangladesh border than rest of the villages located elsewhere in the state.

Comparison of villages of the various developmental block located in different altitudinal zones of the state also revealed certain interesting patterns, that villages of the blocks that are located in the eastern higher altitudinal zone of the mountainous region of the state and those located in the middle section of the parallel ridges are comparatively better served when compared to villages of those blocks that are located in the low altitudinal zone of the western most part of the ridge and valley region, as far as the accessibility and availability of health care facility is concerned. It should be noted however that quite a few blocks exhibit a deviation from this general pattern.

Blocks that contain urban centres do not necessarily record better served situation as far as the accessibility by geographical distance and availability of health care facility at village level is concerned, for instance, among the blocks that are located in the high

altitudinal zone of the east, the two blocks that contained entirely of rural population, namely, Ngopa(Champhai district, formerly part of undivided Aizawl district) and Sangau (Saiha district, formerly part of Chhimtuipui district), both excelled their counterparts blocks that contain urban centres, when proportion of villages having health centres and the aspect of accessibility represented by distance variable is taken into consideration. However, among those villages located in a comparatively low altitudinal zone of the state, the block that contain urban centres registered a situation better than those blocks containing population of entirely rural. On the other hand, among those blocks located in part of the middle ridges, the most urbanized blocks Tlangnuam and Lunglei do not record any better situation than the blocks that contain population entirely of rural like Aibawk block (Aizawl district). It may also be observed, among the blocks that are located in the middle ridges Tlangnuam block which contain the most urbanized settlement in the state, namely, Aizawl records the largest proportion of villages lying beyond 10 Kilometres from the nearest health centres

8. With regard to the prevalence pattern of various diseases in Mizoram the following conclusions were drawn.

Among Principle communicable diseases, Acute Respiratory Infection and Acute Diarrhoeal Diseases, occurrence of which is related to the living environment, habits and sanitation are found to be most dramatic as far as the incidence rates are concerned. Apparently less dramatic diseases like Pulmonary Tuberculosis, Viral Hepatitis and Pneumonia record very high mortality rates per thousand patients. It is observed from the trend of annual morbidity and mortality data at the state level that the existing health

provision is not successful enough in so far as the improvement made in curbing or preventing the occurrence of these diseases are concerned.

Malaria, unlike most principal communicable diseases that have been around this region from time immemorial, has not declined significantly throughout the state. In an area fraught with hovering mosquitoes, in spite of all the strenuous effort on part of the government to reduced malaria incidence, it continues to remain the major health problem of a large section of the population particularly of those living in rural environment. For those areas affected by the disease, the economic impact is enormous, not to speak of chronically infected families, each time a person gets the disease he/or she is bound to miss 5-20 days of work.

Significant variation in the occurrence of malaria in different parts of the state is observed. It was observed that malaria hyper-endemic belt broadly corresponds to the area lying close to Indo-Bangladesh border in the west and areas close to Assam border in the low altitude North West part of the state. The relative dominance of *P. falciparum* and *P. vivax* strain of malaria parasite in relation to altitude in Mizoram is found to be just the reverse of the situation in Meghalaya and Madhya Pradesh. In these two states the *P. falciparum* usually dominates lower altitudinal zone but in Mizoram preponderance of *P. falciparum* in a relatively higher altitudinal zone, i.e. eastern higher altitudinal region of the state is noticeable. This may indicate the high adaptability of the *P. falciparum* parasites inside the vector Female Anopheles Mosquito.

Whereas the six selected communicable diseases statistically emerged as female selective, the occurrence of malaria is found to be higher among males in the study area.

In course of the analysis of mortality and morbidity patterns of the study area it was observed that recently the percentage share of communicable diseases to the total diseases has declined significantly, indicating that there has been a substantial increase in the incidence of non-communicable diseases such as hypertension, diabetes, cancer, road accidents, alcohol and drugs abuse in this state. One reason for this appears to be changes in lifestyles and growing stress of modern social life. One may hope that the relative dominance of communicable diseases over other diseases will soon assume a continuous declining trend in the next few years switching over to the pattern facing more advanced societies, largely because morbidity seems to have been dominated by diseases other than communicable

Urban centres as the foci of health services and high literacy rates seem to generate better consciousness of health care among the people as reported cases of diseases tend to be higher in the districts which have large urban centres. Better facilities means better utilization is clearly brought out by the spatial pattern of incidence of various diseases that those areas which have both higher quality and quantity of health facilities like Aizawl, Lunglei, Kolasib districts usually record comparatively higher rate of diseases incidence.

9. Field investigation undertaken in five villages located in diverse altitudinal zone and Civil Hospital Aizawl led to the following broad conclusions.

Response to government run health care services in rural areas through Sub-Centre is not very impressive. Even though literacy seems to play significant role in generating health consciousness of among the sample population, what is more important

as regards utilization of health care facilities appears to be accessibility represented by geographical distance and availability of better facilities. In all the five selected villages, the proportion of patients who seek medical care from health centre is fairly low for all the category of diseases due mainly to poor facilities and infra-structure; significantly so in the village like Hmawngbu which has no health centre but situated far off from health centres of any type with a comparatively low literacy rate of 50 percent. Household respondents in Hmawngbu village reported that they never go for medical check up except for cases of most critical illness. Moreover, none of the newborn mother had gone for ANC during pregnancy and none of the newborn was reported fully immunized, largely due to distance and financial problem to avail such services in the health centres. By contrast, the remaining four studied villages has a sub-centre each within the village and it has been reported that all the new born mothers in this villages had gone for at least one ANC during pregnancy, irrespective of literacy levels, and all the new born were reported partly or fully immunized.

Health care services in Sub-Centre level from close examination emerged as Maternity and Child health oriented. Majority of the people who utilized the service were women in reproductive age group for ANC and vaccination of the new born. Levels of health consciousness of the rural people are largely affected by availability of the health services within their reach. If health centres are located judiciously with due consideration of population coverage and the distance variable, responses to such facilities are likely to be quite impressive.

Nearness to urban centre has a positive relationship to the health consciousness level of the rural people is clearly brought out by the fact that among the five studied villages, those located closer to urban centres recorded a relatively higher proportion of patients being treated in the health centres when one scrutinized the episodes of diseases during the last one year preceding the survey. Geographical location, situation and economic condition of the people play significant role in affecting utilization of health services at the village level. Habits such as chewing pan or tobacco, and smoking that are detrimental to health are very common among members of the sample households. It is rare to find households where none of the members practiced any of the habits. A very large proportion of villagers have realized the necessity of purification of water prior to drinking. Iodine salt which was introduced as a means to combat Iodine deficiency disorder has found wide acceptance among majority households of the studied villages.

The practice of open defecation has been completely abandoned by almost all the sample households, in its place more sophisticated facility like flush toilet has been introduced even to the households located in rural areas. The percentage of households having more sophisticated toilet facility of flush latrine is quite significant in Thualthu and Sesawng villages, both of which located few kilometers away from urban center and NH-54.

The proportion of patients who said they also visit private clinic frequently is increasing with the increase in income level. High to very high income group hardly utilized OPD Services in the government hospitals. Literacy levels of patients utilizing

health care services in the Hospital OPD services range from illiterate to those that attained Graduate to Post -Graduate levels of education.

10. Limitations of the present research sprung mostly from the limitation of secondary sources of data. Notoriously incomplete, inaccurate and unreliable nature of hospital and other health centres records on disease related data posed itself as a serious constraint to arrive at more meaningful conclusions with more precision. In spite of all its limitation, it is hoped with confidence that the present research outcome concerning the availability and utilization of health care facility and the concomitant health problems in Mizoram will be helpful to the health care planners and managers in formulating future health care policy.

The apparent inequalities in the provision of health care facilities at the various levels of spatial aggregation in this state need special attention. At the blocks level, consistency of the chosen parameters for assessing availability aspect is found to be broadly lacking. For instance, the blocks that are better placed by a set of parameters, viz, *number of health centres*, and *number of doctors* and *beds* in absolute quantity stand out to be the worst served when population as a factor is taken into consideration. It is imperative that population density and dispersion of settlements need be considered first before making any decision related to location of health centers and posting of qualified doctors.

Many villages located near urban centres are found left un-served even by Community Health Worker. Notable examples may be cited of the villages near Saitual town (Thingsultliah block, Aizawl district), villages near Bairabi town (Northingdawl

block, Kolasib district, which formed part of the undivided Aizawl district) villages close to Aizawl city, villages near Tlabung town (Located in Lunglei district). It is not clear if such a situation is indeed due to a policy measure that villages close to urban centres need not be provided with better health care facility as people can avail the facility located in the nearby urban area. If such a locational policy actually exists it should be modified as in such cases and in a hilly terrain like that of Mizoram people would not be able to utilize the health facility in situation of communicable diseases as these need immediate intervention from health workers.

Groups of villages located in the western lower altitudinal zone of the state close to Bangladesh need special attention when compared to the other villages located elsewhere in the state, particularly because constraints associated with distance from the nearest health centres for these groups of villages are relatively higher.

It may be gratifying, following the footstep of more advanced societies, Mizoram is experiencing morbidity shift rather recently, in which dominance of communicable diseases is overtaken by those diseases of non-communicable in nature. As such, morbidity is dominated by diseases other than communicable such as hypertension, diabetes, cancer, road accidents, alcohol and drugs abuse etc. One significant reason for this appears to be changes in lifestyles and growing stress of modern life. One may expect that this trend will continue to assume greater significance in the years to come. Well-preparedness on part of the government to successfully cope with currently emerging health problem related to those specific diseases already described seems imperative. In this sense, the disease transition that characterizes Mizo society need not

be a source of satisfaction, rather a growing concern for the policy makers to suitably plan health care facility including locational aspects.

Malaria, unlike most principal communicable diseases that have been around this region from time immemorial, has not declined significantly throughout the state. In spite of all the strenuous effort on part of the government to reduce malaria incidence, it continues to remain the major health problem of a large section of the population particularly for those living in rural areas. For those areas affected by the disease, the economic impact is enormous, not to speak of chronically infected families. Each time a person gets the disease, he/or she is bound to miss 5-20 days of work. In an area fraught with hovering mosquitoes, it is imperative to make people more aware of the preventive aspect of malaria because the success of government health policy on combating malaria depends primarily on co-operation from the general public. Mention may be made of a welcoming sign in this direction that as a means to revamp malaria eradication programme already undertaken, Intensified Malaria Programme was launched from April 1st 2005 covering all the North-Eastern states including Mizoram and other 3 eastern states of Bihar, Jharkhand and Orissa to intensify the programme. The Programme has its target to collect blood smear from all fever cases, with administration of presumptive dose to them. For vector control the entire state is targeted for 2 (two) rounds of DDT spray in a year and the target is to cover all households. Establishment of Drug Distribution Centre (DDC) and Fever Treatment Depot (FTD) at least one in every village is also another important strategy to combat malaria prevalence. In Mizoram, as many as 957 community based centres, comprising of 716 DDCs and 238 FTD have

been established till May 2005. In a state like Mizoram, where malaria is a statewide endemic or rather epidemic, emphasis needs be laid on effective monitoring and actual implementation of the programme at each level so as to keep the disease at bay.

A huge proportion of household respondents in the sample villages reported that they were satisfied with the performance of the staff in Sub-Centre located in the village. However, sub-centres in those villages are reported to have been ill-equipped with very poor facilities and medicines. Efforts of the staff in government health centres to provide health care to those patients who visited health centres, in spite of such impediments, seems quite commendable. It is recommended at the bare minimum level; in every health centre at least medicines most relevant to the common health problems of the area under its jurisdiction should be made available. Considering the impressive responses of maternity related and child health care provided at the health Sub-centres of the sample villages, it is certain that whatever new innovation introduced concerning better management of health care delivery will soon assume impressive popular response and quick diffusion socially or spatially across the state. Emphasis therefore needs be laid, side by side, on better management of the existing health centres and establishment of new centres in those areas that are relatively ill-served.

The present research at various stages has been hampered by dearth of information and research in health and health care aspect of this region. As regards to the geographical study of health care aspect of Mizoram, the present research, in spite of all its limitation, is a humble effort in this direction. The study takes into account a broad spectrum of health care delivery and therefore only marginally touches upon the growth

and diffusion of modern health care facilities, common health problems, efficacy and constraints associated with utilization of health care facilities, etc.

Issues pertaining to health and health care in this isolated state offer a wide array of avenues for further research. Among many, one such direction of future research could be the study of diseases ecology in which environmental attributes should be correlated with the incidence or occurrence of diseases across the space. Though the present research highlighted some probable environmental causation of diseases, the study of diseases ecology needs to be taken more seriously at lower aggregate level with rigorous field based investigation so as to arrive at more meaningful conclusions.

As regards the morbidity, the present research confined itself primarily with the study of communicable diseases; the geographical study of emerging diseases and pandemic diseases such as, AIDs, cancer, diabetes, hypertension, drug abuse, etc need to be undertaken seriously. With regard to the health care aspect, Maternity and child health, traditional system of health care system etc. may also form relevant topics for future research. As the state is experiencing morbidity and mortality shift, mortality aspect deserves rigorous treatment.

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October, 2005

I, Zarzoliana, hereby declare that the subject matter of this thesis is the record of work done by me, that the contents of this thesis did not form basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in other University/Institute.

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CHAPTER-1

INTRODUCTION

1.1 The Context

The state of Mizoram is located in the north east corner of the India, strategically sandwiched between Myanmar and Bangladesh. As per the Census figure, this isolated hilly state, interestingly, records a literacy rate of 81.23 percent in the year 1991 and with a phenomenal increase in the subsequent decade the figure for 2001 is as high as 88.8 percent. Among the states of India Mizoram is surpassed only by Kerala (90.59 % in 1991, 90.90 % in 2001) as far as the literacy rate is concerned.

As regards urbanization, Mizoram has the distinction of being one of the few Indian states which experienced an extra-ordinarily high level of urbanization. The 2001 Census figure shows that a little less than half of its total population is living in urban areas (49.63 Percent)¹. Needless, to say, literacy and urbanization are considered to be the two key indicators of the process of modernization and are perceived to be extremely important in paving the way for a rapid pace of social transformation.

Given the empirical situation of satisfactory literacy level and considerably high level of urbanization in Mizoram, *prima facie* one expects that there will be a better consciousness about health in this state primarily because literacy and urbanization serve as important parameters of social and cultural development. Availability and utilization

¹ As per the 2001 Census count, the total Population of Mizoram is enumerated at 888573 persons, of which 441006 constitutes the urban population.

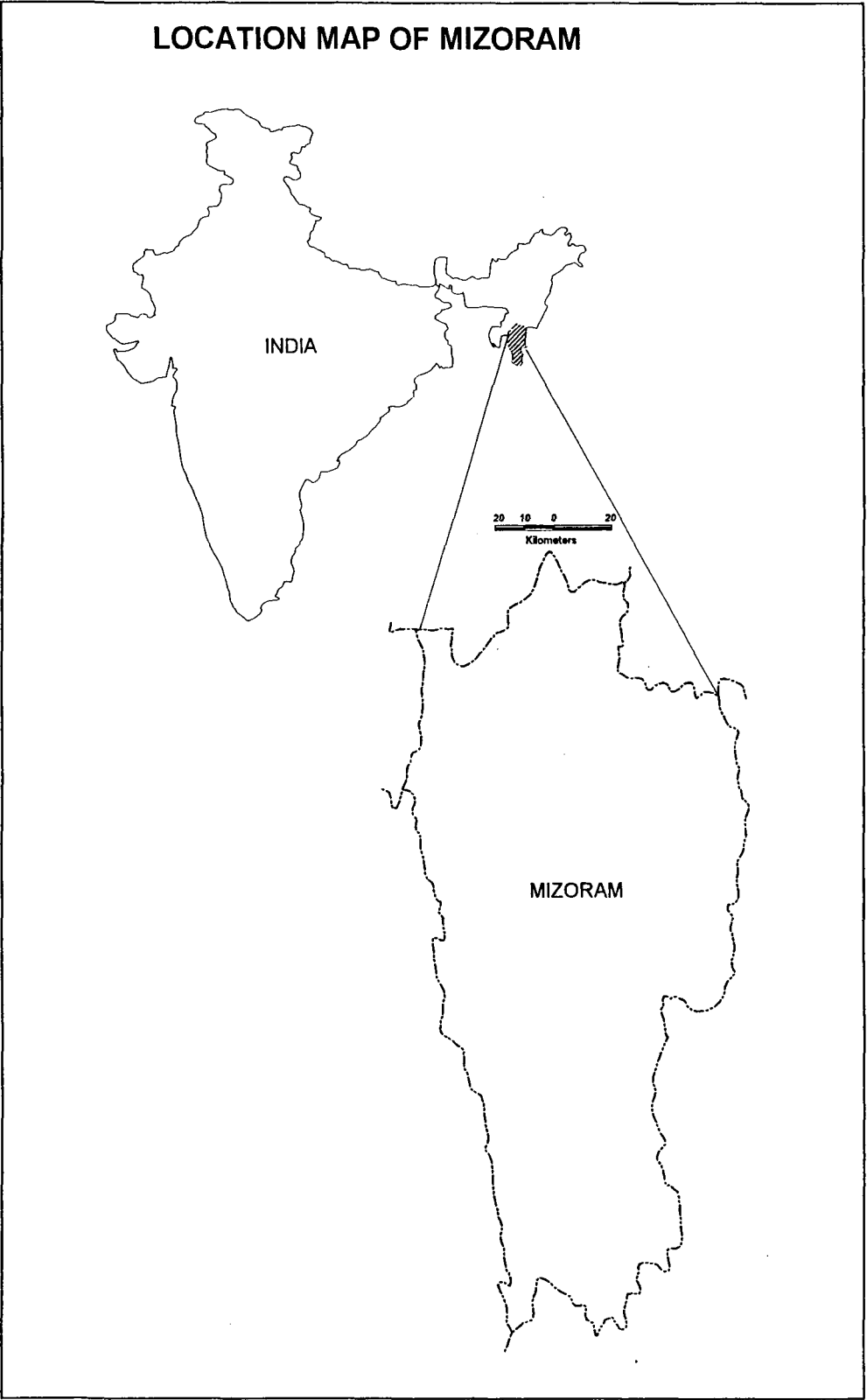


Fig. 1.1

of health care facilities in this context is viewed as a component of overall consciousness for better living standards as a facet of socio-economic transformation.

Conceptually, social transformation takes place when the forces of change bring on its wake all round development which is all pervasive both in its social coverage and spatial spread². It may be rapid if a society has developed an internal dynamism, but it could be slow and even imperceptible if it is characterized by an inertia which stifles change. In any case, change needs be studied in its time – space context.

It is a truism that India is not passing through a process of social transformation which is all pervasive and socially and spatially uniform. There are glaring instances of disparity in the extent of modernization whose contents are fragmentary. One often comes across situations wherein one facet of change is unaccompanied by another- a feature that represents condition of underdevelopment. The spatial outcome of this process is reflected in terms of a contradictory response to forces of change. For example, economically better off regions may not necessarily develop a consciousness for social development and vice-versa. Greater access to literacy and education or urban living styles need not translate itself into a greater consciousness for health standards. It is this nature of contradictions in socio-economic development that the present research intends to examine in the context of Mizoram for the reasons already outlined in the beginning of this section.

² A.Ahmad *et.al.*(1993) Tribal Education: Planning Intervention in the context of Regional Disparities in S.C Nuna (ed.) *Regional Disparities in Education Development*, South Asia Pub. Pvt.Ltd, New Delhi.

It is noteworthy that health care system as a cultural artifact is subject to alterations. The study of health care delivery system therefore, will throw light on how society's attitude towards modern health-care system changes over time.

Further, literacy and urbanization indices alone may not be adequate to judge as to the level of socio-cultural development. Health consciousness index, therefore, comes as an additional help. If the health care facility is adequate and the level of utilization of this facility is high enough, it will indicate that Mizoram is highly developed in terms of its socio-cultural content as explained by literacy and urbanization indices. In other words, it can be said that literacy and urbanization are instrumental in fostering socio-cultural development and the subsequent health consciousness.

Otherwise, if health care facility is inadequate and utilization marginal, then, reasons are to be identified in relation to physical, social, cultural, political, economic, factors etc. The study therefore, views health care provision in its entire physical, social, cultural and political context.

1.2 Statement of the Problem

Of late, there has been a reawakening that *health* is a fundamental right and a world wide social goal. Nevertheless, most people find it difficult to define the term yet they are confident of its meaning and have some construed ideas on what constitutes health³. Health is ranked as one of the most important life domain. Health is man's greatest possession, his source of real happiness. In terms of resource for socio-economic development, nothing can be considered of higher significance than the health

³ K. Park (1997) *Preventive and Social Medicine*, Fifteenth Edition, M/s Banarsidas Bhanot Publishers, Jabalpur, p. 11-12

of the people. An investment on health is an investment on human resource on which depends the national development. Development of health in terms of improvement of the quality of life is therefore, imperative.

India became a signatory to the Alma-Ata Declaration in 1978, thereby committing the country to the goal of “Health for all by 2000”. The Government started to concentrate on development of the rural health infrastructure. However, even at the turn of the century there is still a formidable task ahead to achieve this commitment.

Health problems in a developing country such as India are predominantly reflections of poverty. Substantial decrease in morbidity and mortality is more likely to be accomplished through an improved system for health including preventive services than merely from further advances in medical sciences. Indeed, in the end such improvements are likely to result from all-round social and economic development, from structural change in the society. Therefore, the necessity of sufficient availability of health services such as hospitals, health centres, beds doctors, and other health personnel can hardly be over-emphasized.⁴

Mizoram rarely finds place in the national mainstream largely due to its geographical isolation and economic backwardness. The topography is characterized by steep ridges flanked by narrow valleys aligned mostly in north-south direction, wherein the physical condition is expected to have a significant imprint on the pattering of health care delivery system. The study therefore, needs to focus on the impact of physical

⁴ Rais Akhtar, *et. al.* (1985) “Inequalities in the distribution of Health Care in India”, in Rais Akhtar and A.T.A Learmonth (ed.) *Geographical Aspects of Health and Disease in India*, Concept Publishing Company, New Delhi.

factors in the availability and utilization of health care delivery system at various levels of spatial aggregation.

By and large, Mizoram itself is unique in certain respects; nearly the entire population (95%) consists of scheduled tribe, particularly of the Mizos. The social structure of the Mizos tends to be monolithic. Contact with the European Missionaries and the advent of Christianity completely altered the religious map of this region. The socio-cultural conditions too got affected from the same. Education was introduced as a means for religious conversion. Today's high rate of literacy in the state is a direct result of the foundation laid by the early Christian missionaries. The recent spurt in terms of phenomenal increase in the proportion of urban population and consequent population redistribution across rural and urban areas is also noteworthy.

Given this background, the present study makes an attempt to evaluate the availability and utilization of health care facility in Mizoram- both of which is viewed as a reflection of health awareness of the people. It is important to note here that the availability and utilization of health care facility is confined to modern health care institutions only and thus excludes from its purview the traditional practices which may be beneficial in many ways. The study is undertaken by using conventional geographical methods of analysis. An attempt is made to identify regional disparities in the availability of health care facilities and social differentiation in response to avail such facilities. The study tries to understand the rural- urban differences in the availability and utilization of health care facilities as well as male and female differences in response to such facilities. The adequacy of health care provision is analyzed in relation to

distribution of settlements in diverse eco-regions. An attempt is also made to examine the acceptability to modern institutions of health care facility and the causes of non-acceptability, if any, through field enquiry in sample rural and urban areas.

1.3 Definition and concepts

The widely accepted definition of health is that given by the World Health Organisation (W.H.O 1948) in the preamble to its constitution, which is as follows: “Health is a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity” and also includes the ability to lead a “socially and economically productive life”⁵.

The W.H.O definition, which is now universally adopted, makes it amply clear that health involves a total harmony between man and his environment which induces a state of complete physical, mental and social being. The W.H.O definition of health may appear utopian by any standards and has been criticized by Aubrey Lewis (1980) and many others. But the reason why this definition should be, and has been accepted as a working definition is that it emphasises the multifaceted and multidimensional issues involved in the concept of health, moving it from the confines of medicine into the domains of social sciences, engineering and administration, and thereby underlining the holistic nature of this phenomena⁶.

Health care is an expression of concern for fellow human beings. It is defined as a “multitude of services rendered to individuals, families or communities by the agents

⁵ World Health Organisation (1978) *Health for All* quoted by K. Park (1997) *op.cit.* p.14

⁶ Jayasree De (1998) *Changing Patterns of Health in Developing Countries*, Proceedings of the International Geographical Conference, Vododara, India, Preface

of the health services or professions, for the purpose of promoting, maintaining, monitoring or restoring health”⁷ Such services might be staffed, organized, administered and financed in every imaginable way, but they all have one thing in common: people are being “served”, that is, diagnosed, helped, cured, educated and rehabilitated by health personnel (WHO). In many countries health care is completely or largely a governmental function.

Health care includes “medical care” too. Medical care is a subset of a health care system. The term ‘medical care’ (which ranges from domiciliary care to resident hospital care) refers chiefly to “those personal services that are provided directly by physicians or rendered as a result of physician’s instruction”⁸. According to Park ‘health care’ has many characteristics and include appropriateness (relevance), comprehensiveness, adequacy, availability, accessibility, affordability, and feasibility.

The present study largely limits the term ‘health care facility’ to mean health institutions and services that are created with the objective of promoting, maintaining, monitoring or restoring health to the people. Thus, the words, *health care facility*, *health care provision*, *health care services*, etc are used interchangeably.

Morbidity is defined as “any departure, subjective or objective, from a state of physical well being”⁹ The term is equivalent to such terms as *sickness*, *illness*, *disability* etc.

⁷ J.M Last (1983) *A Dictionary of Epidemiology*, cited by K.Park, *op.cit.* p.25.

⁸ P.R Lee *et.al.* (1977) quoted by K. Park *ibid*, p-25.

⁹ WHO (1959) (1968) *Technical Reports*, quoted by K.Park, *ibid.* p- 52.

Incidence rate is defined as “the number of NEW cases occurring in a defined population during a specific period of time”. *Incidence* measures the rate at which new cases are occurring in a population during a given period, usually one year. It is not influenced by the duration of the diseases. The use of incidence is generally restricted to acute conditions.

The term ‘*diseases prevalence*’ refers specifically to all current cases (old and new) existing at a given point in time, or over a period of time in a given population.¹⁰

In this study, the term ‘*prevalent diseases*’ is equated with ‘*dominant diseases*’ or ‘*frequently occurring diseases*’.

1.4 Study Area

Mizoram lies between 21° 56’ N – 24° 3’ N latitudes and 92° 16’ E – 93°26’E longitudes. Being sandwiched between Bangladesh and Myanmar, its location is of strategic significance geographically and politically and shares a total common international boundary of about 585 kilometres with these two countries¹¹. It is bounded on the north by the Cachar district of Assam and by the state of Manipur, on the east and the south by Myanmar and Tripura. It covers an area of 21,081 Sq km. The Tropic of Cancer, i.e. 23°30’ N latitude divides the state into two almost equal parts.

General Relief

The Physical set up of Mizoram is composed predominantly of mountainous terrain of tertiary rocks. The mountainous hilly ranges are inclined north to south directions in parallel series (Fig.1.3). In between parallel ranges there are deep gorges,

¹⁰ K.Park (1997) *ibid.* pp.52-53

¹¹ Rintluanga Pachau,(1994) *Geography of Mizoram*, R.T Enterprise, Aizawl.p.23

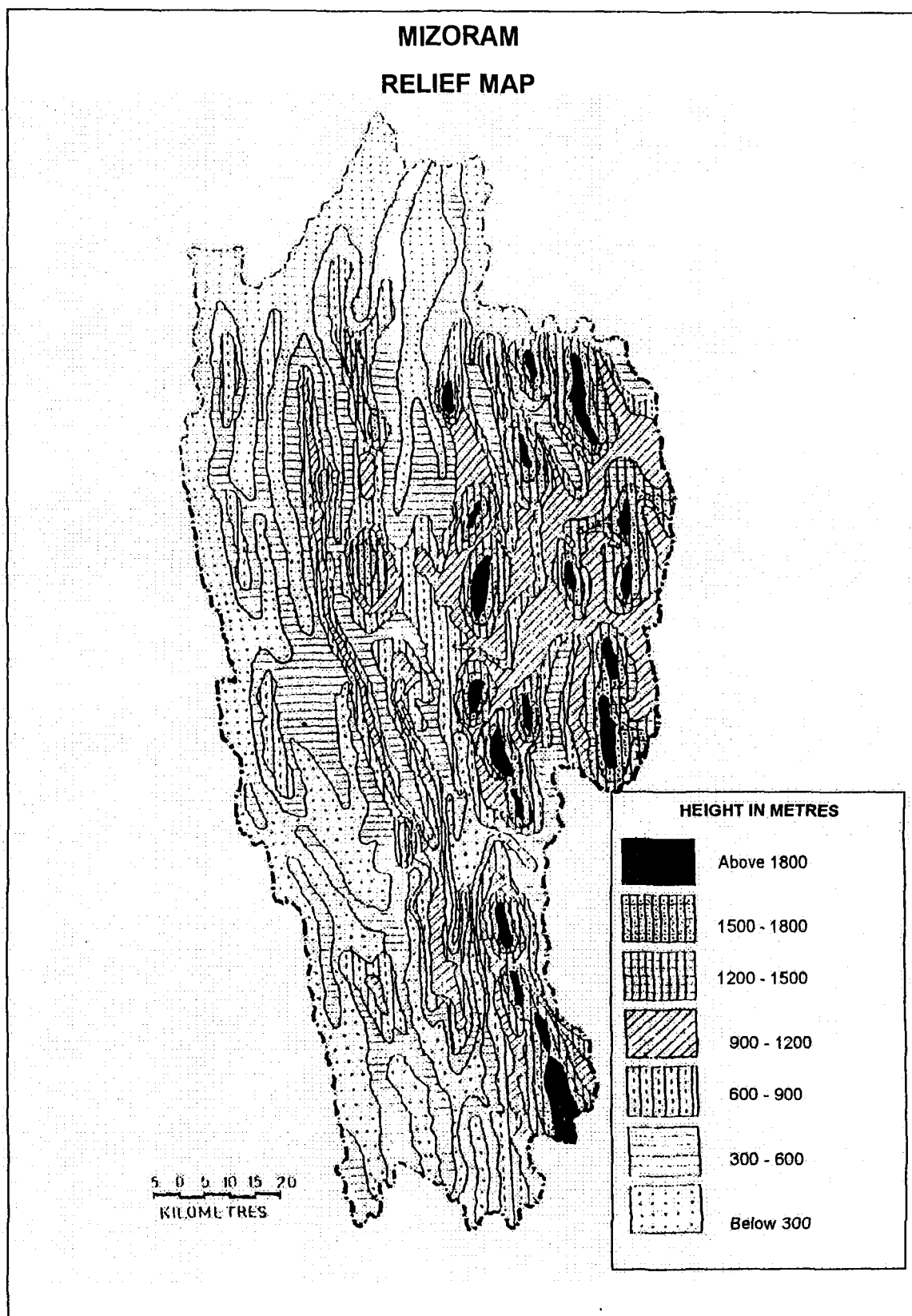


Fig. 1.2

MIZORAM SATELLITE IMAGERY



Fig. 1.3

Source: Department of Science & Technology, Mizoram.

rendering east-west movement particularly difficult in Mizoram. The ranges often assume hog-back shape with asymmetrical slopes¹². The elevation ranges from 40 metres to 2157 metres at Phawngpui (Blue Mountain). There are only few small patches of flat lands which are mostly intermontane plains. The geomorphic features of the state do not show much diversity on the formation of landforms. But one distinct feature observed in Mizoram is that the western slope of the mountain ranges all has a higher degree of slopes.

The eastern half of the state can be classified as *Mountainous Terrain Province* (Fig.1.4). The overall relief of in this province is higher and the slopes are much steeper than in the western half. The altitudes here scale from 400-2157 metres. The high points are generally over 1000 metres (Fig,1.2). Average elevation in this province is in the order of 1500 metres. The slopes are very steep, and elevation difference between ridge top and valley varies between 200 – 600 metres.

As one moves west ward, the ranges progressively lose height. The western part of Mizoram depicts characteristics ridge and valley type of topography. Nearly half of the area of the state is covered by this province varies between 40-1550 metres, and the average elevation is 700 metres. The relief is comparatively lower in the western part and rises higher toward the east. The slopes are generally steep on the western side of the ridge; and elevations difference between valley floor and hill top is in the order of 100 to 200 metres¹³.

¹² Taher *et.al.* (1998) *Geography of North-East India*, Mani Manik Prakash, Guwahati, p.24.

¹³ Rintluanga Pachuau (1994) *op.cit.* pp.31- 35

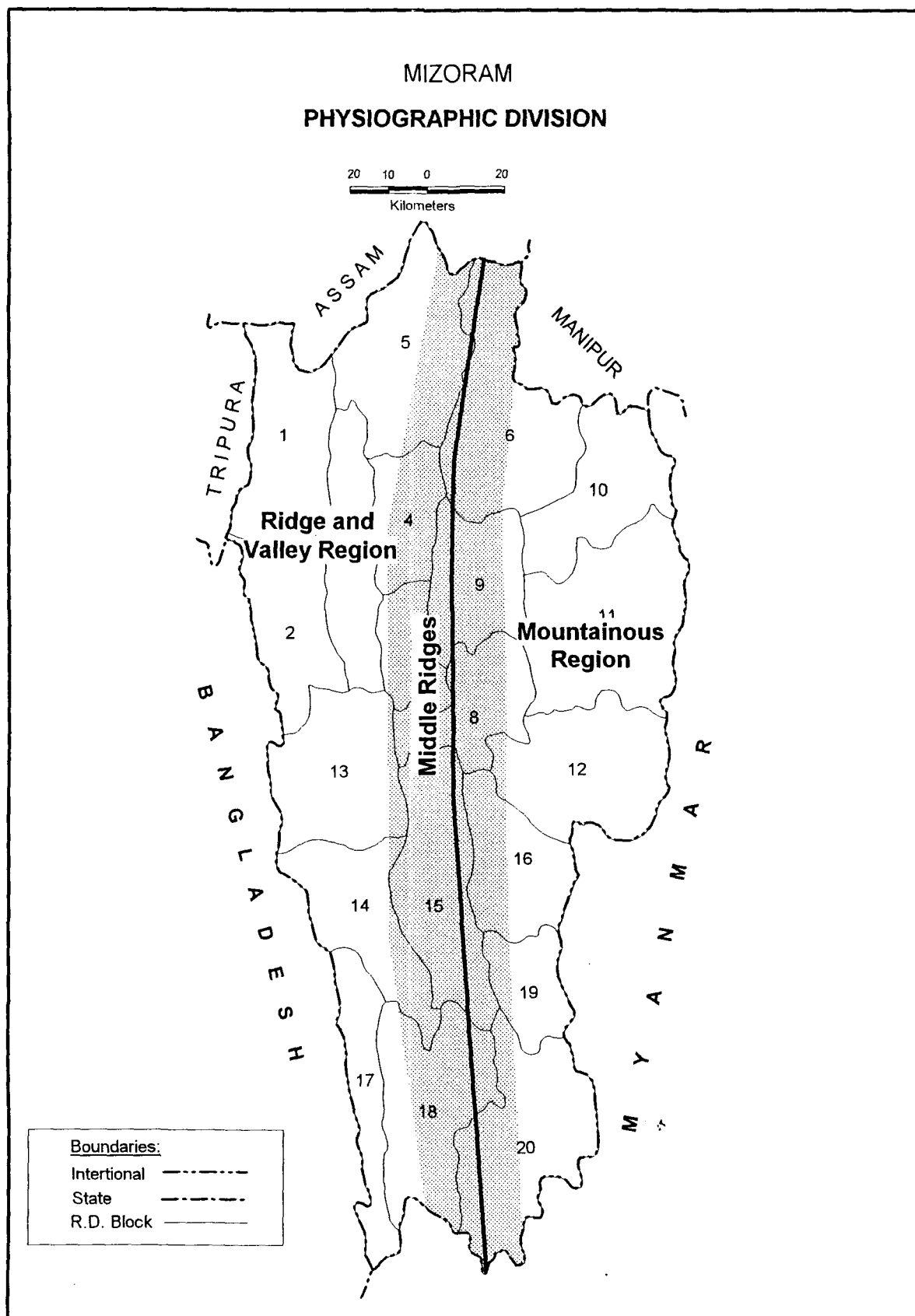


Fig. 1.4

Few pockets of *flat lands* to be found in the state are mostly valley plains interspersed with hills, narrow river valleys and mountains. The largest flat land, Champlain plain, bordering Myanmar in the east has a length of only 11.27 Kilometres and the widest part is 4.83 Kilometres across. The second largest plain Vanlaiphai and yet another important plain, Thenzawl are situated in the middle of the state (north-south direction) but much closer to the eastern boundary of the state. In the North, few patches of flat lands all located a few kilometres from the interstate boundary with Assam include; Phaisen, Chhimluang, Hortoki and Bairabi.

Climatic Character

Mizoram enjoys a moderate climate owing to its tropical location and altitude. The region falls under the direct influence of south-west monsoon. The climate is therefore, humid tropical; characterized by short winter, long summer with heavy rainfall. The salient thermo –characteristics of Mizoram is that temperatures do not fluctuate much throughout the year, excepting in the low-lying valley sites. The highest temperature is experienced during May, June and July. Thereafter the onset of monsoon brings down the temperature. Temperature continues to fall with the break of the monsoon rains, and it is the lowest in December and January. In autumn the temperature varies usually between 18° C and 25°C, while winter temperature ranges between 11°C and 23°C. The summer temperature varies from 21°C to 31°C. Places at higher altitude however experience lower diurnal range of temperature; while places at lower altitudes have higher temperature ranges.

Depending on the variation in temperature and general weather conditions, three different types of seasons are experienced in Mizoram. They are 1) the cold or winter season (November –February) 2) the warm season or spring (March – Early May) 3) the rainy season or summer (Second part of May – late October)¹⁴.

The moderate temperature, high humidity condition and pronounced seasonal variations that characterize the general climatic conditions of the state broadly corresponds to the optimum temperature for the development of both malaria vector (mosquitoes) and the malaria parasites, *P.vivax* and *P.falciparum*, the dominant species in India and the state as well.

The phenomenon of water logging during and soon after rainy season, on the ground, on the forests woods and bamboos engender ideal breeding grounds for mosquitoes. Apart from malarial parasites, the climatic condition is equally suitable for the breeding of insects that causes acute diarrhoeal diseases. The seasonal changes in climatic phenomena too are responsible for increased incidence of various respiratory diseases.

In a recent study, Hazra observed most of the diseases in Mizoram to be totally integrated with the ecology and the natural habitat system. She also found little impact of urban social life on the patterns of health and diseases in the state.¹⁵

¹⁴ *Ibid*, pp 43-45

¹⁵ Jayati Hazra (2002) "The Health Profile of Mizoram", *Geographical Review of India*, Vol.48, No.1, pp.243-253.

Natural Vegetation

. The natural vegetation that thrives in Mizoram falls under three broad forest types, viz, Tropical Wet Evergreen Forest, Tropical Semi-Evergreen Forest and Mountain Sub-Tropical Forest.¹⁶ Along the rivers banks and valleys under humid conditions, bamboo overlapping with tropical wet evergreen forest and tropical semi-evergreen forest dominates the landscape of the western better half of the state. The plenteous growth of different species of bamboo¹⁷ in the State provided considerable household materials to its inhabitants. Bamboo forests fraught with hovering mosquitoes are largely to be found in the western part of the state adjoining Bangladesh, Tripura and Assam. In the lower altitudes, the natural vegetation comprised mainly of thick groves strewn with thick weeds, whereas mountain sub-tropical forests are found on a higher elevation, mostly confined in the eastern fringe of the State.¹⁸

Settlements

The population compositions of settlements in Mizoram have undergone significant changes within the past few decades. Vanlalhlana¹⁹ in his study found the process of urban growth in Mizoram to be intricately associated with the process of

¹⁶ Rintluanga Pachuau (1994) *op.cit.* pp 51.

¹⁷ Mizoram, the then Lushai Hill, witnesses gregarious flowering of bamboo forest once in about every fifty years, followed by a rodent outbreak. It has been alleged that the rats when they fed on bamboo seeds suddenly multiplied in great magnitude and devoured crops in the field within no time; leading to repeated famines in the Lushai Hills. The last famine took place in 1959 and experts are predicting the next flowering to be peaked in the year 2007.

¹⁸ *ibid.* p.53

¹⁹ B.Vanlalhlana (2001) *Population Redistribution and Urbanization in Mizoram*, unpublished PhD Thesis, North-eastern Hill University, Shillong.

internal redistribution of population. Much of the redistribution has taken place between the rural to urban areas than across the rural space. The most important aspect of this redistribution is linked to a rural depopulation; desertion and abandonment of villages for an urban location and the smaller interior towns are the ones which experienced this kind of redistribution. The earlier pattern of a dispersed population has undergone a substantial transformation to a concentrated pattern having its own consequences in a tribal setting and in a physical setting which is very fragile.

Almost all the villages having excessive positive growth of the population are generally found along the main arteries of roads and near the urban centres. Villages experiencing excessive negative growth in their population are found in the interior areas away from the main roads and urban centres of the state.

The distribution of rural settlements in the state was greatly affected by the efforts to group them in selected grouping centres in the wake of M.N.F (Mizo National Front) led insurgent activity since early 1960's for security and administrative concern. As has been pointed out by Jafa (1999)²⁰, the army argued that the segregation and control of the population by this method was necessary for a successful counterinsurgency, hence, the years 1967 – 69 saw the entire rural population of Mizoram (roughly 80% of the total population) uprooted from their homes, to be relocated miles away in the so called 'Protected and Progressive Villages'. This explains the increase in the number of uninhabited villages after 1971. The process continued for

²⁰ V.S Jafa (1991) "Counterinsurgency Warfare: The Use & Abuse of Military Forces" in K.P.S Gill and Ajai Sahni(ed.) *Faultlines - Writing on Conflict and Resolution*, Bulwark Book for The Institute of Conflict Management, New Delhi, pp.79-129

quite sometime in spite of the fact that many villagers returned to the remote habitats after insurgency was contained and the peace accord with the Government of India was finally signed in February 1986. The western and the northern part of the state was much more affected by desertion of villages of grouping centres as evidenced by considerable decline in the number of rural settlements as well as in their population. The uninhabited villages are spread all over the eastern mountainous area. Most of them are confined to the western ridge and valley region particularly in the north and south.

The present pattern of distribution of towns is highly dispersed over most parts of the state though the western ridge and valley areas seem to have attracted more towns of varying sizes than the western mountainous region.

The construction of better road communication network since recent past has significant impact on the settlement patterns particularly of villages in Mizoram. The Mizos, in the past were always very particular about their place of residence and considerable thought was spent on the subject of village site. The highest hill top started as favourite, and the site subsequently chosen would be that which constitutes the most impregnable stronghold. The houses in such villages were laid close to each other with regular arrangement in rows but separated by a space treated as a village street²¹. The historic pattern of villages being built on hill top with clustering houses continued to remain for sometime and still is exhibited by some rural settlements. However, in the wake of the development of road communication network, a number of modern villages in the state now have sprung up along the main transportation lines where houses are

²¹ A.G McCALL (1945) *Lushai Chrysalis*, Reprint 2003, Tribal Research Institute, Department of Art & Culture, Govt. of Mizoram.pp.165-166

built without much intervening space following the direction of the roads. This trend has deep imprint on the pattern of utilization of health care facility too, particularly so in rural areas, as it provides the people greater mobility or ease of movements in and out from the confines of their locality and rural environment.

1.5 Broad Objectives

The research placed before itself the following broad objectives;

to analyse geographical patterns in the availability of health care delivery in Mizoram in its spatio-temporal context;

to assess the level of utilization of health care facility in different regions in Mizoram; and

to explain regional imbalances, if any, in the availability and utilization of health care facility.

1.6 Research Questions

Given the context and the broad objectives of the research, the following research questions are placed for obtaining an adequate answer:

Is the available health facility adequate by national and regional standards, keeping in view the topographical constraints and the distribution of settlements in Mizoram?

Whether response to the available health care facility is spatially uniform in its utilization level or is differentiated on account of institutional constraints?

Whether achievements in the field of literacy and urbanization get translated into a consciousness in availing of health facility or such achievements are independent of each other?

1.7 Data Base and Methodology

In order to analyze the availability and utilization of health care delivery system, the study relies on the following secondary and primary data:

a) Data published by successive Census of India, with regard to population density, rural urban population, settlement distribution and size, availability and accessibility of health facility.

b) Handbook and Annual report, Morbidity and Health care related data published and maintained at Directorate of Health Services, Health and Family Welfare Department Mizoram.

c) Hospitals/Community Health Centres/ Primary Health Centres/ Subsidiary Health Centre Sub-Centres, etc, records regarding facilities available and utilization of such facilities.

d) Morbidity data maintained at the Epidemiology Cell, Directorate of Health Services Mizoram, District CMO Office Aizawl West, Aizawl East, Lunglei, Lawngtlai and Saiha.

e) Malaria Eradication Programme (NVBDCP) section Mizoram,

f) Registrar of Deaths and Births, Directorate of Economic & Statistics, Mizoram, records regarding causes of deaths.

Primary data have been procured through questionnaire and interview of sample households located in rural areas in different eco-regions of Mizoram to elicit information on the patterns of utilization of modern health care facility and causes of their acceptability/non-accessibility of the available health facility.

The studied villages have been chosen in such away as to represent villages located near urban centres and villages located comparatively far off from the urban centres. Purposive random sampling methods were used to select the villages while the households were selected on a random basis. The field work was discontinuous and was completed in a period of 18 months beginning with the winter of 2002.

Since the study primarily aims at evaluating the availability and utilization of health care facility in Mizoram in a geographical framework, the following methodology is used for conducting this research.

An attempt has been made to assess the geographical patterning of the available health facilities in terms of location of such facilities at different levels of spatial aggregation such as, the districts, and the Rural Development Blocks. Special emphasis has been laid on identifying the pattern at the village level by comparing villages of the development blocks. Comparison of such villages has been made with reference to nearness to urban centre and the relative isolation of the blocks where they are located. The attempt here is to examine spatial inequality, if any, in the provision of health care facility.

The inequality factor has been further probed by extending the analysis to accessibility constraint as represented by distance and terrain conditions as well as

facilities such as road communication. Villages have been classified into different categories in relation to physical accessibility to centres of health care facility.

The following parameters have been selected to indicate the availability of health care facility.

- (i) No. of hospitals/dispensaries/ PHCs/ SHCs, etc
- (ii) No. of qualified doctors
- (iii) No. of beds
- (iv) Special health drives for immunization, Maternal care, Malaria eradication, T.B Control Programme, etc

The case of utilization of such facility has been examined by a reference to health centres records for a period of one year divided into seasons. The seasonal variations in utilization is considered important as the climatic conditions often impose severe restrictions to the mobility of the people

As information collected from the health centres are often restricted to age and sex and rarely include occupation, literacy level and economic background of those who utilized these services, information have been gathered from a hundred outpatients awaiting medical checkup in Civil hospital Aizawl (the largest and the best equipped Government runs hospital in the state), Out Patient Department (OPD), in the form of short structured questionnaire. The main purpose of this survey was to assess which section of the population utilizes this facility. The distance covered, nature of illness, the literacy level and economic background of those who utilize these services are analyzed.

Another method of assessing the effectiveness of health care delivery system is to collect, classify and map the morbidity data collected from health offices for major diseases. In the absence of data for the lower aggregate levels except for malaria, six principal communicable diseases have been mapped taking the districts as the lowest spatial unit. In order to understand the morbidity pattern and the efficacy of health care facility, morbidity and mortality pattern at the highest aggregate level i.e. the State, has been analyzed with an accent on temporal dimension.

The data collected from sample households located in five selected villages and the data procured from one hundred out-patients awaiting medical check up in Aizawl Civil Hospital OPD have been analyzed to assess the availability and utilization of health care facility. Special emphasis has been laid on gender, occupational and literacy background of the persons while scrutinizing their utilization of health care facility.

1.8 An Overview of Literature

It is generally agreed that geography is a discipline that bridges the social and environmental sciences. The effect of environment on human health attracts scholars with interest both in medicine and geography. The application of geographical concepts and techniques to investigate health related issues led to the birth of medical geography.

Although some date the field back to the time of Hippocrates almost 2,500 years ago, the term medical geography was first introduced by 18th and 19th century physicians who attempted to understand the relationship between the occurrence of disease and environmental conditions. The most widely used example is John Snow's hand-drawn dot map of cases of cholera (a water-borne disease) concentrated around the

Broad Street well. The map, by some accounts, led authorities to remove the pump handle during the 1854 epidemic in London.

In Britain, the term was first used by Alfred Haviland, in his work 'Geographical Distribution of Disease in Great Britain', then the subject began to gain popular recognition. By the end of 1949, the subject was recognised by I.G.U. and a new commission was formed in Lisbon. Later in 1968 at New Delhi, India, medical geography was given a permanent status. One of the founding fathers of post-war Medical Geography is Jacques May (1950), who published a methodological paper, titled, 'Medical Geography' its Methods and Objectives.²² He is well known for his theory of disease ecology.

During 1950s, American geographers prepared a series of maps on a regional and global scale on regional heterogeneity of environmental conditions in prevalence and distribution of diseases. A milestone was laid in the field of medical geography with the publication of Learmonth's regional study of survival, mortality and disease in Indo-Pakistan zone. He conclusively established the social and geographical relationship with malnutrition in underdeveloped areas.

In USSR, as early as 1955, a medical geography committee of the USSR Geographical Society was set up and was recognised later as Medical Geography section. Thus, the concept of medical landscape has been developed by the Soviet Geographers. In early 1960's Jusatz (1961) in Germany stirred interest in medical geography through his '*World Atlas of Epidemic Diseases*'. In Britain, Howe's *National*

²² A.T.A Learmonth (1991) "Geography and Diseases Ecology Beyond Cartography" in Rais Akhtar (ed.) *Environment and Health, Themes in Medical Geography*, Ashish Publishing House, New Delhi, p-51.

Atlas of Disease mortality is one of the best works in this vein. In Belgium as well various studies by geographers like Picheral (1969), Charlier (1969), etc dealt with the spatial distribution of mortality. Stamp (1964) insisted on micro level mapping of causal factors in disease association.

Erickson (1991) when he wrote, *Health services Research in the United States since 1960*²³ pointed out that the issue of geographic access to service is one not readily recognised by non-geographers. He accused the authors of the book “*Access to Medical Care in the United States: Who Has It and Who Doesn’t*”, all of whom belonging to prestigious Chicago centre for Health Administration, for not giving importance to ‘geographic access’ in their studies. He asserted that the importance of the distance (or travel time) variables is too great to ignore, particularly for patient use of hospitals.

The ecological approach to the study of spatial distribution of diseases and their possible causes remained the main trend till mid 1970’s along with some attention on spatial aspects of health care delivery, their planning and health behaviour.

Since late 1970’s there has been tremendous growth in both conceptual and empirical studies in medical geography. Among these, mention may be made of G.F Pyle’s *Applied Medical Geography* (1979), A.E Joseph and D.R Philips’ *Accessibility and Utilization: Geographical perspective on Health Care* (1984), G.F Pyle’s *Diffusion of Influenza: Progress and Prospects* (1986), Rais Akhtar’s *Health and Disease in Tropical Africa: Geographical and Medical Viewpoints* (1987), K.Jones and G.Moon’s

²³ R.Erickson (1991) in Rais Akhtar (ed.) *Environment and Health*, Themes in Medical Geography, Ashis Publishing House, New Delhi, pp.613-636.

Health, Disease and Society: An Introduction to Medical Geography (1987), A.T.A Learmonth's *Disease Ecology: An Introduction* (1988), etc.

As regards the health-care aspect of Medical Geography, a recent study undertaken by P.S Maro (1990); in the book titled *Population Distribution and Health Facilities* is notable. He asserted that, in spite of the unevenly distributed population, a high degree of equity has been achieved in Tanzania. Health care Facilities and services have been provided keeping in mind the patterns of population distribution to ensure that such services have maximum accessibility and concluded that this has resulted in a considerable reduction in regional inequalities in health services²⁴. Other important recent contributions in health care geography include Reinhard Henkel's (1990) *Health care Services in Zambia*, F.Iyun's (1990) *Healthcare Planning and Distribution of Health Services in Oyo State, Nigeria* in which she focuses attention on the factors that have influenced the location of hospital services, and the study of D.R Philips (1990) who highlighted the success of health care in Hong Kong, etc

1.8.1 Indian Scenario

According to Akhtar, probably the first scientific attempt to identify the regional factor associated with the prevalence of diseases in India was made by McClelland in 1859. Later on Macnamara (1880) studied in detail the Geographical factors influencing the occurrence of diseases particularly of Goitre in Himalayan and Sub-Himalayan Regions. Besides, Fayrer's (1882) *Climate and Fever in India; The Diseases of India* by

²⁴ P.S Maro (1990) "Population Distribution and Health Facilities" in Rais Akhtar and Yola Verhasselt (ed.) *Disease Ecology and Health: Readings in Medical Geography*, Rawat Publications, Jaipur, pp.293-302

Chevers (1886), and Moor's (1880), *Tropical Climates and Indian Disease* are also pioneering effort in this direction.

A decade after Indian Independence, A.T.A. Learmonth's contributions in the development of the subject is noteworthy. His early works on *Regional Geography of Malaria in India and Pakistan* (1957) and '*Medical geography in Indo-Pakistan* (1958)' made a great impact. Many geographers henceforth published a number of papers mostly focussing on communicable diseases. The Aligarh school of medical geography, however, concentrated studies on nutrition and deficiency diseases.

The 21st International Geographical Union, Commission on Medical Geography was held in New Delhi in 1968. Since then, Medical Geography lured the attention of geographers more than ever before. Consequently R.P Mishra's '*Medical Geography of India*' was published in 1970, which undoubtedly was a great help to the understanding the themes of Medical geography.

Among the various themes of medical geography, health-care aspect seems to be the most neglected field in India. According to Akhtar (1999) "the typology of researches in India is the reflection of the prevalent health problems. Nevertheless there is a dearth of studies on health-care aspect, though wide inequalities in the provision of medical facilities throw a challenge to social scientist, including geographers to utilize their respective approaches in the solution of problems pertaining to equity"²⁵ He, however, was convinced that the recent trends in health care researches by Indian Geographers is encouraging. He went on to mention some of the works in this field.

²⁵ Rais Akhtar (1999) "Medical Geography", in G.S Gosal (ed.) *Fourth Survey of Research in Geography* (1999), Manak Publications, New Delhi pp 311-317.

Mukherji (1976) made an attempt to solve the problem of identifying settlement of villages which are in need of extra health facilities. Bladen (1976) focussed his attention on the patterns of acceptance of family planning methods in India. Akhtar (1978) worked on spatial patterns and growth of health care facilities in Rajasthan. Shinde (1980) in his survey of the distribution of health care facilities in Maharashtra identified remarkable imbalances in the provision of health care. Ahmad (1980) has explored the nature of physical availability of health care facilities to scheduled tribes within a belt which extends from coast to coast in Middle India. Sharma (1981) has investigated the spatial organization of health facilities in Bulandshahar district. Rushton and Mahadev (1982) discussed the locational efficiency of the proposed sites of health facilities in Bellary district and emphasised the importance of accessibility in the provision of health services. A joint paper by Akhtar and Izhar (1985) concerned itself with the growth and disparities in provision of hospital and bed facilities in India during 1957 and 1975.

De (1998) provided a very interesting review of the works on geography of health in India and was wary of limited attention paid to the utilisation aspect in most geographical studies on health which according to her 'end up as cartographic representation of selected disease prevalence'. The International Conference on Changing Patterns of Health in Developing Countries (1998) addressed itself to diverse themes on medical Geography, but here too, the papers contributed on social aspects of availability and utilisation of health care was rather very few.

But most recently, several papers were published on health-care aspect of medical geography during the period 2000 - 2004. Rihouey (2000) asserts that the development

of the private health care sector and the recent opening up of the Indian market to foreign companies has considerably altered the supply and type of medical care available. With focus on healing practices in primitive tribes of Rajasthan, Mishra and Kapoor (2002) attempted to study various patterns of health care and attitude towards healing practices existing among the Saharia.

Akhtar has published an edited book (2004) entitled *India: Health Care Patterns and Planning*. This book includes a number of chapters by medical geographers. Notable among them are Choube's Chapter on health care delivery system in Madhya Pradesh; Rajeshwari and Sinha's on inequalities in the development of public health care facilities in rural Haryana; Akhtar and Khan's research on spatial distribution of health care delivery system in Jammu & Kashmir; Mathur's paper on health care centres in Rajasthan; Ramesh and Iyengar's contribution on distribution of homeopathic health care centres in Bangalore; and Hodgson's chapter on spatial efficacy of health centres in Salcette, Goa.²⁶

In his review of works currently undertaken in Social Transformation and Social Well being, Nayak (2004) asserted that studies on health, health care and diseases occupied a prominent place in researches undertaken in the reference period of 2000-2004. He reviewed some of the important works in this field. Notable contribution in this period came from Yadav and Prasad's (2002) study on the health care delivery system in Madhya Pradesh; Hazra's (2000) study of urban health in Kolkata. She also presented a health profile of Mizoram". Nayak and Mukherji (2000) analyzed the prevalence of major diseases with special reference to Acute Respiratory Infection

²⁶ (Rais Akhtar), *ibid*.

Diseases in Meghalaya. In his review Nayak commented that “it is difficult to differentiate between these studies and those undertaken in medical geography. Nevertheless most of these studies reflect social conditions more than disease ecology and thus are commentary on our social health and are critics of government policies in combating communicable and easily preventable diseases”²⁷.

Interests in Medical Geography research is also emerging in the Department of Geography NEHU. A notable contribution has come from an M. Phil dissertation on availability and utilization of health services in Khasi Hills (Warjri 2003). The study found the irrational location of health facilities as a major cause of lower utilization of health care facilities however inadequate in the Khasi Hills region of Meghalaya. In yet another study, Mukherji (2004) found that availability of medical vis-à-vis health care facility in the state (Meghalaya) is low by any standard and certainly a matter of serious concern. As regards morbidity, he found diseases of respiratory infections ranking first and closely followed by diarrhoeal diseases. Economic conditions along with all its related components like house type, presence of separate kitchen and privacy etc were found to be the main determinants of disease morbidity in the villages of Meghalaya.

In a recent study Hazra (2002) found little impact of urban social life on the disease pattern in Mizoram. The study, though a pioneering effort in this direction for the state, is based on secondary sources and concerned itself mostly with the mortality data, and an in-depth studies based on field work with due reference to morbidity and health care provision remain a much felt need in this direction. It true that geographical

²⁷ D.K Nayak (2004) “Social Transformation and Social Wellbeing” in H.N Sharma (ed.) *Progress in Indian Geography*, 30th International Geographical Congress Glasgow, UK 2004, pp 125-130.

study of health care focusing on the aspect of constraints in utilization therefore is imperative.

1.9 Organization of the Manuscript

The manuscript of this thesis is organised into the following broad chapters. The first chapter includes the design of research containing statement of the problem, definition and concepts, broad objectives, a brief note on the selection of the study area, basic research questions, data base and methodology and a detail review of researches on the field.

Chapter II provides a brief historical account of the growth and diffusion of modern health care facilities since its inception in the state. The chapter emphasises on the temporal dimension. While highlighting the introduction of modern health care in the State, distinction has been made between the role of the Missionaries and the British Indian Administration. Part of the attempt here is to reflect how society's attitude towards health and health care changed over time. This chapter includes an overview of the various health programmes implemented in the state.

The third Chapter takes into account the spatial inequalities in the provision of modern health care facility at different levels of spatial aggregation. Emphasis has been laid on the pattern at the village level.

Chapter IV made an attempt to understand regional patterns in the prevalence of major communicable diseases with an accent on temporal dimension at the aggregate level. A section of this chapter is devoted to discuss the most dramatic vector borne

disease Malaria. In order to examine the efficacy of the available health care provision, morbidity and mortality data have been correlated with the existing facility.

The fifth chapter analyses the data collected at the village and household level to attempt at an explanation of the level of utilization of the existing health care facility and constraints in utilizing such facilities.

The last chapter provides a summary of conclusions and an attempt has been made to give some constructive suggestions regarding health care delivery system based on the research findings.

CHAPTER – II

GROWTH OF HEALTH CARE FACILITY IN MIZORAM

2:1 Introductory Statement

Until 1894 scientific health care facility was by and large non-existent in Mizoram. It was the British administration and the Christian missionaries who introduced modern health care facilities in the state. This chapter provides an outline of the growth of modern health care facilities in the state since its inception. Needless to say, in health care geography temporal aspect needs be given due recognition as it helps better understanding of the process of spatial spread of health care facility over any given area. It is desirable that the facility increases over time and should cater to the growing needs of the people with the increase in population and modern health consciousness.

Attempt has also been made in this chapter to throw light on the Mizos' traditional concept of illness and afflictions and their own system of treatment so as to get a keener insight into how society's attitude towards modern health care system has changed over time.

2:2 Mizo Traditional Concept of Illness

Mizoram was an unexplored and almost unknown land to the outside world even after the British had occupied other parts of North East India. In their secluded life, the Mizos maintained their own culture and their traditional belief and practices, language,

codes of justice and morality.²⁸ As Chatterjee has put it “The Lushai (Mizos) had no doctors, even quacks. In case of accident or diseases they had no one to help. The Lushais considered the diseases, accident or epidemic as the curse of the *Ramhuai* (Devil) and then there was no way out from them.”²⁹

Before the advent of Christianity, the Mizos believed that life was subjugated to the control of a number of spirits who could only be appeased by sacrifices. They believed that every big tree, hill, big stone and such other objects and places were inhabited by various spirits who were responsible for sickness, death, drought, storm, bad crops or accidents which befall the people. They were often careful not to incur the displeasure of the spirits which might harm them. In each village a *bawlp* (priest or exorcist) would be available to deal with the spirit that caused such diseases and afflictions³⁰. They believed that only *Bawlp* (priest or sorcerer) knew which spirit was causing a problem and what sacrifice would placate it.

Even though the Mizos have their own traditional system of treating simple diseases such as the application of jungle plants on wound and sores, use of salts externally on burns, use of hot ginger, soda, and water for colds and stomach relief, external application of fats of animals for treating respiratory diseases and rheumatism, drinking of animals’ bile for treating diarrhoea and cholera, etc as supplementary cures was known among the Mizos since long. At a time of sickness they had no alternative but to perform sacrifices to the evil spirits to cure sickness. Of the many sacrifices, *Khal*

²⁸ BR Ambedkar’s Speech in the Constituent Assembly of India, Constitutional Hall, New Delhi on 6th September 1948, C.A.I, Official report, Lok Sabha, Secretariat, New Delhi Vol IX – p.1025

²⁹ Suhas Chatterjee (1985) *Mizoram under the British Rule*, Mittal Publication, New Delhi, p.196

³⁰ V.L Siana (1978) *Mizo History*, Aizawl Reprint, p.25

was a sacrifice to those spirits which were supposed to cause bad health and misfortunes³¹ *Daibawl* sacrifice was offered outside the villages for the recovery of a sick person. All sacrifices to the spirits were performed by *Bawlpu* or an exorcist.³²

It is evident, therefore, that the Mizo's traditional concept of illness and health were inextricably linked with their animistic world view. The animism practiced by the Mizos was quite elaborate. It is not now to be found in any part of Mizoram, but a hundred years ago it dominated every village.³³

Before the arrival of Christian Missionaries, the Mizos barely knew anything of and benefits of modern medicines and doctors.³⁴ The people were ignorant to take proper care of their health. It was obvious therefore that sanitation, healthy personal habits, nutrition, proper diet and cleanliness find very little place among the traditional Mizos, if not, completely unknown.

2:3 Genesis and Growth of Health Care Facility

There were two different agencies who introduced health care facilities on modern scientific lines in Mizoram. One was the British Indian Administration (the Government) and the other was the Christian Missionaries

³¹ J.V Hluna (1992) *Education and Missionaries in Mizoram*, Spectrum Publication Guwahati, p.17

³² Rev Zairema, "*The Mizo and their Religion*", New Magazine, Winter Issue. No.2 DI&PR, Govt. of Mizoram, Aizawl, pp.14-15.

³³ J.M Lloyd (1991) *History of the Church in Mizoram* (Harvest in the Hill) Synod Publication Board, Aizawl, p.9

³⁴ Lalrinmawia,(1994)"Mizoram Kristianna Hnathawh," in *Mizoram Gospel Centennial Jubilee - 1994*, Souvenir, Synod Publication Board, Aizawl, p.15

In 1891, the British annexed the territory.³⁵ It was obvious that the British occupation had paved the way for the coming in of the Christian Missionaries. The year 1894 is a significant landmark in the history of the Mizos; for in this year that the pioneer Missionaries came to Mizo hills and introduced the alphabets and laid down the foundation of modern education among the Mizos. The introduction of education slowly broke down their isolation from the rest of the world, broadened their outlook and moulded them as responsible citizens out of savages and barbarous race³⁶

It was also the British occupation and the advent of Christianity which marked the modest beginning of modern health care system in the state, towards the end of the 19th Century. The Mizos seems to have been quite receptive to the new system as a result of Christian instruction and the efficacy of the new system of health care. The coming of Christianity and education brought about a great change in the Mizos society. The animism of the Mizos which believed in supernatural and spirits, to whom they offered sacrifices in order to propitiate them, was now transformed to Christianity by doing away with such beliefs.³⁷ When Mizos found that the missionaries' medicines and prayer worked better than sacrifices to demons, they were more attracted to Christianity.³⁸ It was now found that there was hidden physical explanation of the causes of illness and ailments. The Missionaries were, therefore, instrumental in changing Mizos' general perception of health and the causes of diseases and ailments.

³⁵ Government of Mizoram (1992) *Mizoram in Brief*, Directorate of Information and Public Relations, Mizoram, p.8

³⁶ J.V Hluna, *op.cit.*, p.21

³⁷ J.V Hluna, *ibid.* p.226

³⁸ Strom, Donna (1983) *Wind through the Bamboo, The Story of Transformed Mizos*, The Diocese Press, Madras, p.53

The growth of health care facilities in Mizoram, from its inception can be traced, divided into different heads as, those under the aegis of the Christian Missionaries and those run by the Government.

2:4 Health Care under the Missionaries

The early missionaries had had some training in tropical hygiene and medicine, and always carried simple remedies with them. The medicines they gave established mutual confidence and the Mizos were very sensitive to the kindness shown.³⁹ The pioneer Missionaries, who first settled in Mizoram, J.H Lorraine and F.W Savidge during their time (1894-1897) had distributed medicines as evidence by a common saying of those days which goes like this, "*I went to where the missionaries live, Good medicines is what they give*".⁴⁰ Nag wrote, the pioneer missionaries on their tour to interior places of Mizoram observed the horrible conditions of people's health which can best be expressed in the statement of a missionary: "Malaria was of course prevalent everywhere. There was also dropsy, internal parasites, hookworm, dysentery, tuberculosis and other dread diseases. Parents had large families but more than 50 per cent of the children died before reaching adolescence. Many mother died at childbirth due to lack of care and superstitious diseases."⁴¹

2:4:1 Health Care in North Mizoram

Rev. D.E Jones, the first Welsh Missionary who came to Mizoram (1897-1926), though not qualified doctor has been studying at Glasgow Medical School; attended on

³⁹ J.M Lloyd (1991) *op.cit.* p.31

⁴⁰ The equivalent term of 'Medicine' in Mizo 'Damdawi' literally means 'Magic Healing'.

⁴¹ J.M Lloyd, "*On every High Hill*" p.41 quoted in C.R Nag's (1993) *The Mizo Society in Transition*, Vikas Publishing House, New Delhi, p.155

the sick as best as he could. According to Nag, seeing the gloomy picture of the Mizos' health and diseases, Rev D.E Jones and Rev E. Rowland immediately after their arrival ventured to acquaint the Mizos with modern medicines. But as their knowledge of medicines was limited, the two missionaries simply helped in curing simple diseases. The steps taken by Rev D.E Jones and Rev. E Rowland were, however, the first in this sphere of Mizos' acquaintance with the medicines and use medicines for cure of diseases. Mizos never knew what medicine was and its use before this.⁴²

When Rev D.E Jones learnt about the way of life of Mizos and how they believed sickness to be the work of evil spirit he realized the need for a doctor. Consequently, on his return from Furlough in 1908, he brought with him Dr Peter Fraser, B Sc, MD and his wife.⁴³

Table 2:1
North Mizoram: Health Centers under the Missionaries

Health Centre	Year of Opening	Remarks
Health Clinic, Mission Veng	1897	Opened at the arrival of the First Missionary doctor, Peter Fraser
Dispensary, Durtlang	1910	Few beds were Kept ready for those who needed admission.
Welsh Mission Hospital,Durtlang	6.3.1928	With the help of two Mizo trained staff.
Rural Health Centre, Sihfa	29.1.1956	4 day Journey on foot from Durtlang, Aizawl
Rural Health centre, Sawleng	4.4.1956	4 day Journey on foot from Durtlang, Aizawl
Rural Health Centre, Pukzing	4.8. 1956	7-8 day Journey on foot from Durtlang, Aizawl
Rural Health centre, Chhawrtui	29.5.1958	6 day Journey on foot from Durtlang, Aizawl

Source: Compiled from Presbyterian Church Synod Hospital, Durtlang, Diamond Jubilee (1928-1988) Souvenir and Medical Mission in Mizoram, "Personal Experience" by May Bounds and Gwladys M. Evans

⁴² J.M Lloyd (1991) *ibid.* p.155.

⁴³ Chhawnthangvunga (1988) "History of Durtlang Hospital –I," in *Diamond Jubilee Souvenir* Synod Publication Board, Aizawl, p.133.

On arrival Dr Fraser opened a clinic above the Mission Veng Church. Many patients came to him and he was often called to visit patients at their homes. He would go to remote and far off villages if he received a call from any one. He treated around 24,000 patients during the first one year, which clearly testifies the need of a doctor for the Mizos. In 1910, he opened a dispensary⁴⁴ and kept beds ready in it for those who needed admission.⁴⁵ Dr Fraser was a real pioneer of the healing ministry in Mizoram. He was instrumental in convincing the Mizos that sickness was not due to the work of evil spirit. He was therefore instrumental in changing the general perception of health and the causes of diseases among the Mizos. He, however, had to leave in 1912 due to a controversy with the government over slavery, which he strongly opposed. But during his short period of stay among the Mizos, he impressed people and acquainted them to the proper use of medicines. It is said he treated more than fifty thousand patients during his brief stay in Mizoram.⁴⁶

Dr John Williams arrived in Mizoram on 22nd February 1928. With the help of only two trained staff he converted the old theological school building and used it for the hospital. With the admission of the first patient on 6th March 1928 the Durtlang Hospital was inaugurated and named the 'Welsh Mission Hospital'. In order to augment the nursing services, Dr Williams started a school of nursing in the same year.⁴⁷

⁴⁴ The First so called Hospital or Dispensary under the Missionaries was opened in Durtlang near Aizawl.

⁴⁵, Chhawnthangvunga (1988) *op.cit.* p.133

⁴⁶ C.R Nag (1993) *op.cit.* p.156

⁴⁷, Chhawnthangvunga. (1988) *op.cit.* p.135

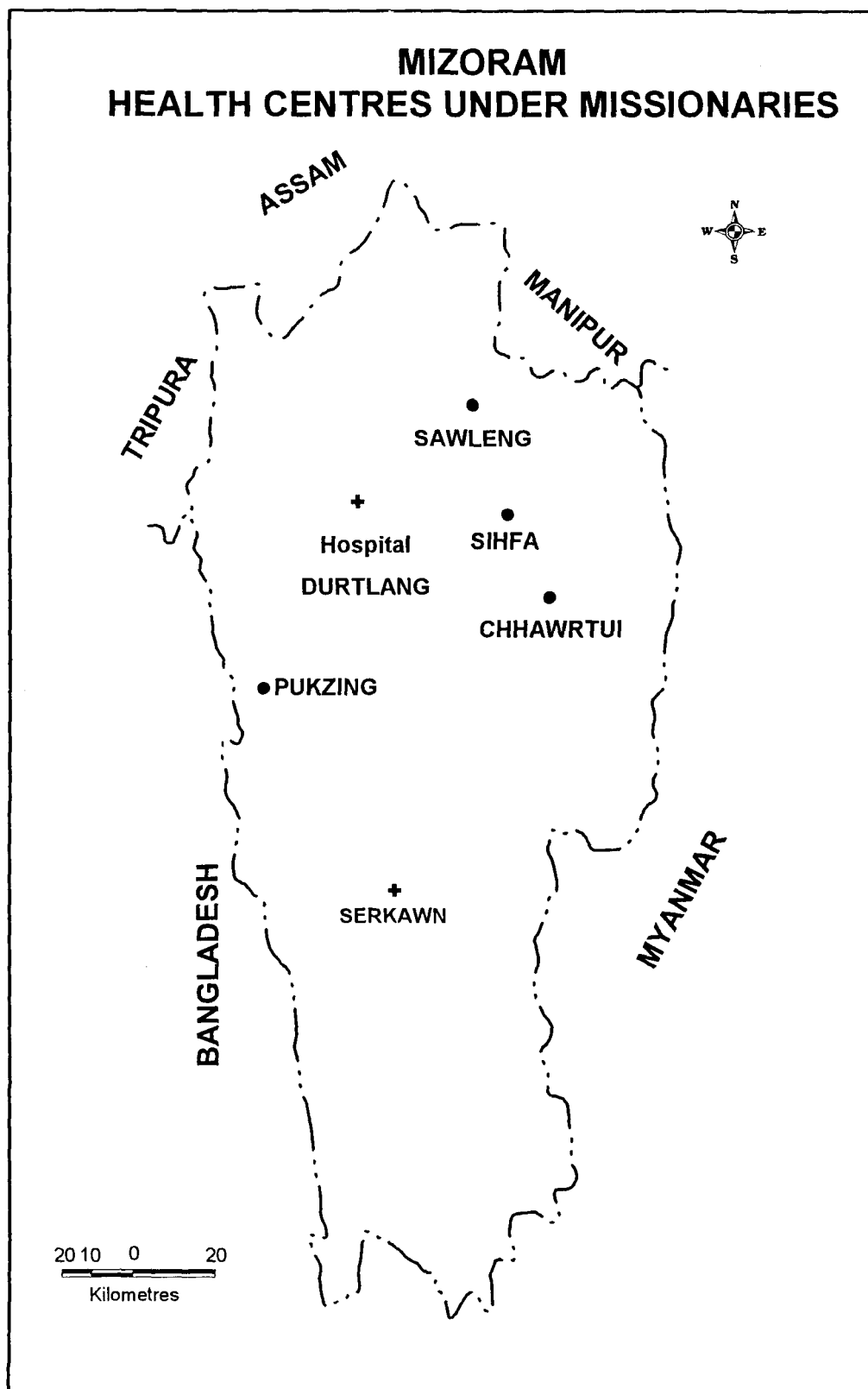


Fig. 2.1

Besides the hospital at Durtlang, Rural Health centres were opened at four remote villages (See Table 2:1 & Fig. 2.1). They were left with trained Mizo nurses and the missionaries themselves took a regular round of visit to these centres at certain interval. However, when insurgency broke out in the year 1966, it was impossible to maintain the Rural Health Centers and they ceased to function since then.

Among the Welsh Presbyterian Missionaries who have served in Mizoram, about fifteen were trained medical staff and were devoted mainly to health and medical services. From the year 1908 – 1968, four (4) doctors and eleven (11) nurses of European origin have settled and served in Mizoram. (See Appendix-1)

It was obvious that the Welsh Missionaries have attended thousands of patients in the Mission dispensaries, village health centres and hospital. The role of the Welsh Mission in providing curative health care may be well understood from the average annual rate of patient treatment computed for various periods (Table 2.2).

Table 2:2
North Mizoram: Average Annual Rate of Patients Attended by Welsh Missionaries

Period	In-Patient	Out-Patient	Total
1910 -1913	—	23672	23672
1933 -1935	282	5312	5594
1937 -1940	882	5101	5983
1944-1945	1040	2399	3439
1947-1948	1080	1947	3027
1954-1955	1173	3634	4807

* Besides, hundreds of patients have been attended every year while journeying through the region.
Source: Compiled and computed from Reports of the Foreign Mission of the Presbyterian Church of Wales on Mizoram 1894 – 1957 Compiled by K.Thanzauva.

2:4:2. Health Care in South Mizoram

In the south, the Baptist Mission acquainted the Mizos with medicines simultaneously with the Presbyterian Church in the north. The two pioneer missionaries,

J.H Lorraine and F.W Savidge, after a stay of almost four years had to leave Mizoram in December 1897 on the instruction of the Mission board that sponsored them. The two however returned to Mizoram as Missionaries of the Baptist Mission Society to work in the southern part of Mizoram. They arrived in Lunglei, the new Baptist Missionary Society (henceforth BMS) station on 13th March 1903. Before returning to Mizoram, they both entered the Livingstone College for a course of study in surgery and of tropical diseases and tropical hygiene. At first, Savidge used part of his Bungalow as a dispensary in the Mission headquarters at Serkawn. Hence, Savidge and Lorrain wrote in the Mission Reports for 1903; “Several hundreds of patients have visited the Mission dispensary during the last six month and have great faith in our medicine”.⁴⁸

In 1919 Ms E.O Dicks, a missionary nurse came to Mizoram. Separate dispensary was built and was inaugurated in 1923 and was used as a hospital. E.O Oliver, another missionary nurse joined the hospital in 1922. The Hospital was without a resident doctor for long 24 years.⁴⁹ In the intervening years, it was fortunate, however, that from the nearest BMS Hospital at Chandragona, presently in Bangladesh; Dr Teichamm and Dr Bottoms used to visit Lunglei, staying for about a month or more to cater to the needs of the patients. The felt need of a resident doctor was so great when fortunately in 1957 the BMS deputed Dr H.G Stockly (Dr Zomuna) and his wife who

⁴⁸ Baptist Church of Mizoram (1993) *The annual Report of the BMS on Mizoram, 1901-1938*, Mizoram Gospel Centenary Committee, Lunglei, p.8

⁴⁹ The Baptist Church of Mizoram, *Medical and Health*.,<http://www.bcm.org.in>. Internet, Date of download 25/7/2004.

was also experienced with health care, came to be the first doctor to serve the community at Serkawn.⁵⁰

During the period from 1919-1977 as many as many as nine nurses and one doctor of European origin settled and served in Mizoram under the Baptist Mission Society (See Appendix-1).

Table 2:3
South Mizoram: Average Annual Rate of Patients Attended in the BMS Dispensary

Period	Patient (Annual Average)
1904 - 1909	3000
1910 - 1915	5345
1916 - 1921	7580

Source: Compiled and computed from The Annual Report of BMS on Mizoram 1901- 1938.

The BMS Missionaries have attended thousands of patients in the Mission dispensary. The role of the BMS mission in providing curative health care may be explicable from the average annual rate of patient treatment calculated for various periods (Table 2.3).

A training School for Nursing, the very important component of the Mission Hospital, Serkawn, was started in 1952, with a course in Auxiliary Nursing and Midwifry (henceforth ANM). Over the years the Government trained a good number of students in ANM whose services were in constant demand by the Hospital as well as.

The contribution of Laker Pioneer Mission, which had its headquarters in Serkor (near Saiha in South Mizoram), in the field of health and medical care cannot be comparable with the Welsh Mission and Baptist Mission as the former did not open hospital or health centre. The first missionaries, Mr. & Mrs.R.A Lorrain arrived in

⁵⁰ *ibid.*

Serkor on the 26th September 1907. Mr. R.A Lorrain, though not a qualified doctor had 2 years training in Medicines at David Livingstone Medical College, London, before he came to Mizoram. It is said that he had treated and distributed medicines to the needy people of those days.

The contribution of the Missionaries in the field of health care can hardly be overemphasized. It is no exaggeration to say that they were the ones who practically brought the Mizos at the fold of modern health care based on sciences and thereby completely changed the general perception of diseases and ailments.

The Welsh Mission and the BMS Mission both had opened Nursing School of good quality and over the years a good number of students were trained in nursing and midwifery. Needless to say, missionaries were also instrumental in educating the general public about health and sanitation. They used to visit even the far flung and isolated parts of the region to give lectures on topics of sanitation and general hygiene among the people. While introducing the use of medicines, the missionaries also paid attention to the prevailing unhygienic conditions of the Mizos' way of living. The missionaries therefore tried to inculcate hygienic habits among the Mizos through various organizations they introduced. A few such organizations are:

Bible women, an organization introduced primarily to spread Christianity among the Mizo women. But side-by-side, it guided the womenfolk in cleanliness. The organizers threw light on sanitation, maternity care and the like.

Child Welfare Organization was established by the Presbyterian Mission at Aizawl which aimed to give instructions to mothers on how children should be taken

care of, how to keep house and household things clean and its advantage in the maintenance of family health. In south, the Baptist Mission also opened one orphanage which not only looked after motherless babies but also had trained a number of Mizo mothers how to bring up children, how to keep children in good health.

The Mission Schools, besides literacy instructions, acted as centres for hygienic training. Teacher in schools used to instruct pupils on hygiene and its effect. Besides, the missionaries also exerted their influence in changing the indigenous housing pattern to promote hygienic conditions of the Mizos.

Earlier the Mizos used to build one-roomed dwelling house, with the provision of only one door, in which they would accommodate all the family members and other household articles. Again, while inducting the Mizos a sense of hygienic habit, the pioneer missionaries also tried to change the Mizos' indigenous eating habits too. Formerly, The Mizos used to eat food in a group, sitting around a big dish of food. Every one would take from the same dish. This undoubtedly bore a strong sense of cordiality and fellow feeling. But at the same time, it helped spreading diseases from one another. The practice of using an individual plate in taking food as it exists in the Mizo society today, thus, had its origin in the Mizo-Christianity contact.⁵¹

The history of missionary enterprise in the Lushai Hills is indeed glorious. It is no exaggeration to state that the Missionaries were the real torch-bearers of civilization among the ignorant Lushais (Mizos) population.⁵² This is particularly true as far as the

⁵¹ C.R Nag (1993) *op.cit.* p.158-160

⁵² Suhas Chatterji (1885) *Mizoram under the British Rule*, Mittal Publication, New Delhi, p.201.

health consciousness and change of attitude towards the use of modern medicines among the Mizos is concerned.

The discussion on the role of the Missionaries in the field of health care may now be closed with the words of C.R Nag, who said the following:

“the use of medicine, another innovation in the society, was first introduced by the Christian Missionaries ... It was, of course, true that there was a wave of strong opposition against treatment of diseases by medicines initially. But gradually the use of medicine was welcomed, for people found that medicines were cheaper than costly sacrifice for curing diseases on the one hand, and on the other, they observed quicker and better results by the use of medicines than offerings of sacrifices for the cure of diseases. The Mizos, therefore, began to use medicines to treat diseases leaving their traditional practice of healing. The initiator of the change was none but the missionaries.”⁵³

2:5 Health Institutions under the Governments

In 1891, when Mizoram (Lushai Hills) was annexed to the British, the northern half came under Assam while the Southern portion was administered by Bengal. In 1898, the British decided to merge the two areas into a district under a Superintendent. The same year also marked the beginning of a settled administration in the district.⁵⁴ At the time of Indian independence, the region remained as one of the districts of Assam and it was then known as Mizo District until it enjoyed the status of Union Territory in 1972. In the year 1986, Mizoram was accorded a full-fledged state status.

The Development of health care facility in Mizoram under government administration can be studied as under the following periods:

⁵³ C.R Nag (1993) *op.cit*, pp. 154-155.

⁵⁴ J.D Baveja, (1970) *The Land Where the Bamboo Flowers*, Publication Board, Assam, Guwahati,. p.74.

2:5:1 Formative Period (Under Assam Government 1891 -1972)

As mentioned earlier, it was the British occupation that marked the beginning of modern health care facility in Mizoram. Thangdailova rightly observes “this development was an important milestone in the history of health services in Mizoam in the sense that the team of that administration included the sanction and appointment of the first medical officer for Mizoram. Though there was no record of the exact date and names of qualified Medical Officers who first set foot on the soil of Mizoram, Dr H.B Melville, Commandant of one section of Lushai Expedition and Dr Whitchurch I.M.S a member of the contingent to support Lushai Expedition of 1889-1890 were no doubt amongst the pioneer Medical Officers”⁵⁵.

It has been found in the Champhai Dispensary Inspection book that on 22nd November 1896 E.Christian Harr, Surgeon Captain, the then Civil Surgeon, Lushai Hills visited the dispensary⁵⁶. According to Chatterjee, “In 1897 Captain Mc Leod I.M.S was appointed as the Civil Surgeon of the Lushai Hills District”⁵⁷. Since then, the seeds of health care services continued to germinate in Mizoram.

In the absence of proper records it is difficult to trace the history of the origin of the Health Department. Whatever records are available, they are scanty and rather fragmentary. This is particularly true of the early formative period. It is in fact one of the oldest functional department to be established in Mizoram.

⁵⁵ B.Thangdailova (2003) “Modernization of Health Care Services in Mizoram” in R.N Prasad and A.K Agarwal (ed.) *Modernization of the Mizo Society*, Mittal Publication, New Delhi, p.34.

⁵⁶ C.Thangchhuana,(2000) “*Mizoram Health Department Tobul*” in Mizoram Government Doctors Association (MGDA) Annual Conference 26-27 April, 2000, Millennium Souvenir,Aizawl.p.59

⁵⁷ Suhas Chatterjee, (1985): *op.cit.* p.197.

Table 2:4
Mizoram: Growth of Health Centres run by the Government

Period	Year	Hospital	Main Centres (CHC,PHC,SHC)	Dispensary	Sub-Centre
Under Assam Government (1894 to 1972)	1896	-	-	1	-
	1920	5	*1	7	*9
	1947	2	-	7	-
	1966	3	3	21	-
	1972	3	4	55	-
UT Govt. (1972- 1986)	1986	7	51	-	314
Statehood Since 1986	1998	7	75	-	336
	2001	7	67 & 25 Clinic	-	351

*58

Source: Compiled from Mizoram Health & Family Welfare Department Records Handout, B. Thangdailova, (2003), *op.cit* & C. Thangchhuana(2000), *op.cit*

In 1894, a tent was erected at Aizawl to provide medical aid facility to labourers which was converted in 1896 to a Dispensary with some Emergency Beds.⁵⁹ Subsequently, in 1896 Aizawl Hospital was made functional with 20 beds.

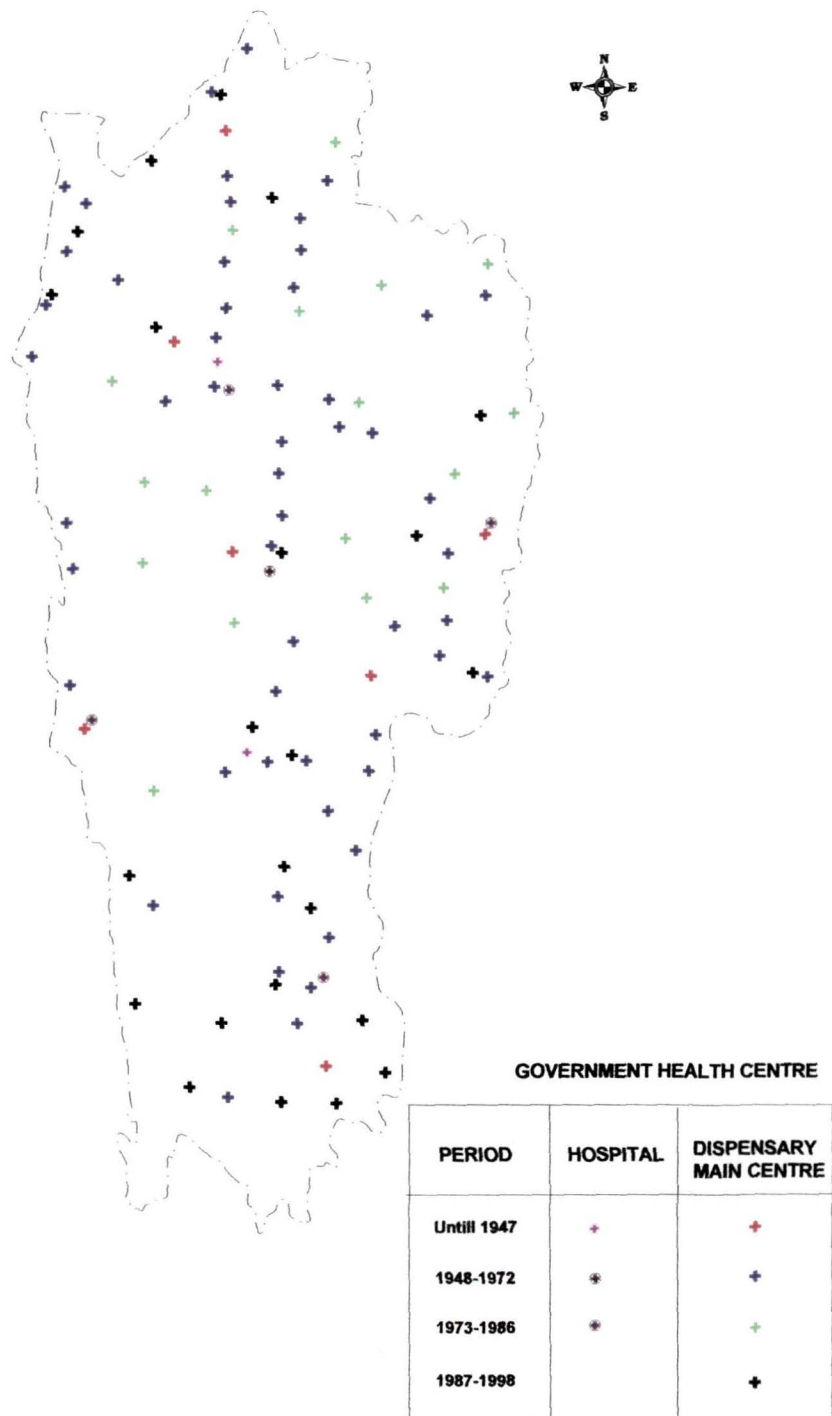
During the period from 1896 to 1920 there were 7 Dispensaries known as Traveling Dispensary with 5 to 6 Emergency beds at different interior places throughout the state (Lushai Hills), in the villages of Champhai, Kolasib, Sairang, N.Vanlaiphai Sialsuk, Tlabung and Tuipang.⁶⁰ However, in addition to the 7 dispensaries already cited, according to C. Thangchhuana there were two other dispensaries at Lunglei and Vahai villages. During this period, two nominal hospitals were also established, one in Aizawl (20 bedded) and the other one in Lunglei.

⁵⁸ Slight variations as to the number of existing health centres given by C. Thangchhuana, He regarded Lunglei Hospital as a dispensary and hence, puts the number of Dispensary during that period at 9 *op.cit*.p.59

⁵⁹ B.Thangdailova (2003) *op.cit*. p.34

⁶⁰ *ibid*.

MIZORAM GROWTH OF GOVERNMENT HEALTH CARE FACILITIES



Note: Sub centres are not included in this figure, but distribution included in Chapter 3

Fig. 2.2

Until Mizoram enjoyed the status of Union Territory, on 20th Feb 1972, Mizoram Health Services was under one Civil Surgeon (District Chief Medical and Health Officer) as one District of Assam state and SDMOHO was the administrative head of Lunglei Sub-Division to assist Civil Surgeon Aizawl.⁶¹

The growth of health centres in such a situation was so slow that at the time of Indian Independence (1947) Government run health centres were just two hospitals i.e. Aizawl Hospital (with 36 indoor beds) and Lunglei Hospital and 7 dispensaries located at different places throughout the State (the then Mizo District). There were two regular Medical staff, vaccinators exclusively for small-pox control Programme and a Bioscope operator at Aizawl to propagate Health Education among the people.

When insurgency⁶² broke out in the year 1966, there were 3 hospitals, 21 Dispensaries with emergency beds (7 are Traveling dispensaries) and 3 PHC. Unfortunately, 9 of these Dispensaries were damaged and all the health centres could hardly function during this 20 years period (1966 -86) of insurgency.⁶³

2:5:2 Health Care Facilities under Union Territory (1972 – 1986)

Upgradation of the Mizo District council to the status of Union Territory on 21st January 1972 automatically upgraded and changed the organizational set up of Health

⁶¹ *ibid*.p.34

⁶² The M.N.F (Mizo National Front) led insurgent activity which later demands 'Separate Home land for Mizo' in early 1960's lasted for more than three decades and was finally ended when 'Peace Accord' with the Government of India was signed in February 1986. (for fuller treatment consult R.N Prasad's (1987) *Government and Politics in Mizoram* Northern Book Centre, New Delhi, V.S Jafa's (1991) "Counterinsurgency Warfare: *op.cit*, Lalchungnunga's (1993) "Regionalism in North-East India: The Case of Mizoram" in B.Pakem(ed.) *Regionalism in India*, NEHU Publication, Shillong, pp. 250-261), etc.

⁶³ B.Thangdailova (2003) *ibid*.

Department.⁶⁴ A separate Department, Health and Family Welfare Department, headed by Director then came into being under Mizoram Union Territory.

The existing Government health centres throughout Mizoram in 1972 were in the order of 55 Dispensaries, 3 PHC and 1 Health Centre and 3 Hospitals. The growth and development of preventive as well as curative health care services under the UT Government has been phenomenal and hence unprecedented in history. Besides up-gradation of existing health centres, opening of new centres have been done in various parts of the territory. As such, when Mizoram attained its statehood in 1986 there were 7 Hospitals, of which 2 were specialized hospitals, one exclusively for the treatment of tuberculosis and the other for Leprosy. As many as 51 main centers and 314 sub centres were made functional to cater to the needs of the people living in various parts of the state (Figure 2.2)

Implementation of MPW Scheme & Health Worker Training School

Under the UT Government due emphasis was accorded to modernization of health care services. Thangdailova observes “one of the most important milestones in the process of modernization of health care services in Mizoram was implementation of Multipurpose Worker Scheme in toto on the whole state in 1978. All the uni-purpose programmes /schemes – family planning, malaria control, leprosy control etc were unified and placed under Multipurpose Worker Scheme (MPW) as per the guidelines of

⁶⁴ *ibid.* p.35

Government of India⁶⁵. Mizoram is one of the few states implementing MPW scheme in the entire country.

On the introduction of MPW scheme, the ANM School first started in Aizawl Civil Hospital in the year 1957 was upgraded to the status of Health and Family Welfare Training School since October 1980. The Multipurpose Health Workers are the key players in the implementation of various health programme of the Government at village level till today. The role of the health workers trained in this School as regards the government health care provision at village level can best be described by the report given by the teaching staffs which is as follow:

“It is firmly believed by the teaching staff of the Health Workers’ training school that service to the rural poor is service to the nation. To serve the deprived rural people, The Multipurpose Health Workers’ are the appropriate persons. We also believe that unless the rural population is given the highest attainable health, the main objectives of the Health and Family welfare Department will never be achieved. It is also recognized that the first responsibility of the school is to train out the best Health Workers by giving full technical knowledge; zeal to serve the rural poor and to make them realized that they are the key workers to help the rural people towards their roads to health. It equips the students in the art of teaching the community on different topics of health, helping people in their sickness, preventive measures against communicable diseases, discharge of the service of Maternal and Child Health (MCH), Reproductive and Child Health (RCH), Family Planning (FP) and all other National Health Programmes.”⁶⁶

2:5:3 Health Care Facilities under State Government (Since 1986)

The period of insurgency came to an end with the attainment of statehood in February 1986 (see footnote No.62). A major area of attention by the state Government was health services which remained highly neglected on account of insurgent activity for

⁶⁵ *ibid.* pp 35 – 36

⁶⁶ Government of Mizoram(2005) *Annual Report (2004-2005) Health Family & Welfare Department*, Directorate of Healthy Service, Mizoram, Aizawl, p.82.

a long two decades or more. The state government concentrated its attention to qualitative improvement and strengthening of the existing health centres which were opened and started during the period of insurgency rather than opening of new additional centres. Under the various Five Year Plan, health care services in Mizoram have taken a giant stride towards modernization. The strategy in the plan for medical coverage includes improvement of health care facilities in rural areas by establishing new Community Health Centres (CHC), Primary Health Centres(SHC) and Sub-Centres, establishment of a referral state hospital, establishment of nurse's school and pharmacists, training centres, improvement of infrastructure to combat, control and eradicate epidemics and communicable diseases.

Available health care facilities as indicated by institutional strength shows that in 1998 there were 7 Government Hospitals, 75 Main Centre (92 including Clinics in 2001) and 336 odd Sub-Centre (351, in 2001) (Table 2.4 & see Chapter III for detail treatment concerning the spatial patterning of existing health care facilities in the state).

The state Government has given due emphasis on human resource development, infrastructural development and modernization of health care services. In the field of Human Resource Development, Mizoram has established Regional Para Medical and Nursing Training Institute in Aizawl, under Ministry of Home Affairs; Govt. of India through North Eastern Council (NEC) funded Project. The Institution offered both Degree as well as Diploma Course, such as B.Sc Nursing, Laboratory Technology, X-ray and ECG technology, Ophthalmic Technology, Diploma in Pharmacy, Health Worker and GNM etc.

Civil Hospital in Aizawl is now equipped with certain specialty services in the form of qualified personals in different disciplines of specialties, up to date appliances for treatments and diagnosis of various diseases. Cobalt therapy unit has also been installed in Aizawl for treatment of cancer patient.

In a recent development, the construction work of 300 bedded State referral Hospital, in Falkawn, near Aizawl is underway. The hospital is proposed to be of high standard fully equipped with diagnostic and curative facilities. It may however take another decade to be fully functional.

Another remarkable step in order to augment health services is that, the Mizoram Government, on a regular basis, used to organized mobile clinic or *Health Mela* annually in rural and urban areas so as to provide access even to the people who are partly denied access to health care facilities on ground of poverty and isolation.

2.5.4 Government Health Programmes in Mizoram - Brief Reflections

It may be worthwhile to highlight the various health programmes being implemented in the state to have a better insight into the ground realities of the availability and utilization of health care facility at a smaller aggregate level.

The various Health Programmes, such as family planning, malaria control, leprosy control, etc which were once unified and placed under Multipurpose Worker Scheme have now been diversified, and at the administrative level, separate section for each Programme implementation has been set up under Directorate of Health services, Mizoram. This has enabled each section to function independently, work out their own plan of actions, priorities and finally promotes efficiency.

National Vector Borne Diseases Control Programme

Under the Revised pattern, malaria Programme is implemented in N.E States including Mizoram as 100 per cent central assistance is available since 1995. In 2003 the name of the programme was rechristened as National Vector Borne Diseases Control Programme where beside malaria, other vector borne diseases like J.E Dengue, Filariaries, and kalaazar were included under the common umbrella. Intensified Malaria Programme was launched from April 1st 2005 covering all the North-Eastern states and other 3 eastern states of Bihar, Jharkhand and Orissa to intensify the programme. The main goal is to reduce malaria morbidity by 30 per cent and mortality by 50 per cent in 5 years. Besides, it also aims to train or re-train health personnel including NGOs and private sectors to build up public private sector partnership for prompt and proper treatment of malaria.

Opening of community based Drug Distribution Centres in each and every village is one of the strategies for prompt treatment of malaria. It also aims at risk reduction of malaria transmission through integrated vector control by IRS as well as treatment of bed-nets with insecticides. The main aims and objectives of the Programme as specified by the Department include early diagnosis and treatment, Malaria transmission risk reduction, enhance awareness about Malaria control and promote not only community participation but also NGOs participation to combat malaria incidence. The Programme has its target to collect blood smear from all fever cases, with administration of presumptive dose to them. Blood smear collection should not be less than 10 per cent of the population. For vector control the entire state is targeted for 2

(two) rounds of DDT spray in a year and the target is to cover all households. Establishment of Drug Distribution Centre (DDC) / Fever Treatment Depot (FTD) at least one in every village is also another important strategy to combat malaria prevalence. As many as 957 community based centres, comprising of 716 DDCs and 238 FTD have been established till May 2005 (see Appendix-II)

Reproductive and Child Health (RCH) Programme

Since 1997, the Government of India followed up the International recommendation on Reproductive and child Health (RCH) as a National Programme. RCH Programme integrates all the related programmes of the Eighth Plan and it aims to bring all RCH services easily available for the community. Accordingly, the RCH Programme was started in Mizoram since mid 1998 and various Maternal and Child Health Scheme have been implemented. The main objectives of the Programme is to provide quality integrated and sustainable Primary Health Care services to women in reproductive age group and children (up to 5 years) and special focus on family planning and immunization. Mizoram was included among the selected 24 districts of the 17 selected states for the implementation of RCH Sub-Project (Area Project). The Sub-Project covered the entire state of Mizoram and it was mainly concerned with infrastructural development of rural health, as it aims to bring all its services easily available to the community. The RCH Sub- Project had come to an end on 31st March 2004. However, RCH II is likely to start with effect from 1st April 2005.

Since the scheme which had been implemented in RCH-I were mostly concerned with rural health, the Government of India has approved Urban Health Project for

Aizawl and Lunglei towns since January 2004. Consequently, other district capitals are also soon to be included under RCH Programme.

Table 2.5
Mizoram: RCH-I Achievements, 1998-2004

Particular	Number/Percentage
Number of Health Camps Conduced	50
Referral Transportation of Pregnant Women	1994
Delivery Under 24 Hours Delivery Services	8121
Eligible Couple under the Programme	98148
Percentage of Institutional Delivery	66.7 %
Home Delivery but assisted by Trained Attendant	89.81 %

Source: Annual Report 2004-'05, Health and Family Welfare Department, Mizoram

The above table roughly summarized the performances and achievements of RCH-I programme in Mizoram. During RCH – I (1998 – 2004) as many as 50 health camps were conducted across the state (Table 2.5). As a means to encourage institutional safe delivery, 24 hours delivery services scheme, and referral transportation of pregnant women scheme was introduced in the case of complicated pregnancy. As per the report of the state RCH section, as many as 1994 women were assisted under referral transportation scheme during the same period.

Expanded Programme on Immunization (EPI)

Expanded Programme on Immunization (EPI), a close ally of Maternal and Child Health Programme has been launched by the Government of India since 1978 with the objectives of reducing the mortality and morbidity from vaccine preventable diseases of childhood. The UNICEF from 1985 renamed it as “Universal Child Immunization” (UCI). It has two vital components, immunization of pregnant women against tetanus, and immunization of children in their first year of life against the six EPI target diseases (tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis and measles) by making free

vaccination services easily available to all eligible children. Pulse Polio Immunization campaign was also launch in the state along with the rest of the states in India since 1995.

In Mizoram, the immunization services are being provided through the existing health care delivery system, and there is no separate cadre of staff for EPI. Significant achievements have been made under this programme in the states. The target and achievements under EPI as given by the Health and Family welfare Department Mizoram is tabulated as under.

Table 2.6
Mizoram: Target and Achievements of EPI (April 2004- March 2005)

Sl. No	Vaccine	Target	Achievements	%Achievements
1.	T.T Pregnant Women	21645	17060	78.10
2.	OPV	18787	17517	93.24
3.	DPT	18787	17360	92.40
4.	BCG	18787	16192	86.19
5.	Measles	18787	17581	93.58

Source: Annual Report 2004-'05, Health and Family Welfare Department, Mizoram

Although the target was “Universal” immunization by 1990, but in practice, no state in the country, has ever achieved 100 per cent immunization of children. Universal immunization is therefore best interpreted as implying the ideal that no child should be denied immunization against the tuberculosis, diphtheria, whooping cough, tetanus, polio and measles. It may therefore be safe to conclude the target achievement of EPI in Mizoram is quite satisfactory during the above reference period as shown by table 2.6.

School Health Programme

The National School Programme was launch in 1977 as a centrally sponsored scheme in Mizoram. It was started in 1978 in selected PHCs. After the end of centrally

sponsored scheme in 1991, the programme was taken-up by the state. Since 1993 the Programme has been extended to all PHCs and CHCs where a medical officer are posted, as well as in urban areas such as Aizawl, Lunglei and Saiha. The primary objectives of the programme include, Promotion of positive health of school children, Prevention of diseases, early diagnosis/ treatment/follow-up/ referral, awakening of health consciousness, provision of healthful environment. It has been targeted to conduct as much health check up as possible among the school children by increasing the number of school visit in every district. It also aims to train medical officers as well as school teachers at every district on school Health Programmes, with particular emphasis on, personal hygiene, household and school environment sanitation, detection of School children with health problems, give treatment and follow-up action. The achievements of School Health Programme during the period April 2003 to March 2004, as reported by the Health department can be summarized in the table below.

Table 2.7
Mizoram: School Health Programme (April 2004-March 2005)

No. of School	No of School Visited	School Visited	No of Students Examined	Student with Health problem detected
1128	444	39.4 %	16503	25.42 %

Source: Annual Report 2004-'05, Health and Family Welfare Department, Mizoram

Revised National Tuberculosis Control Programme (RNTCP)

Due to the inadequacy of the National TB Control Programme with a cure rate of below 60 % per year, the revised programme RNTCP was being introduced in the country. In October 1993, the RNTCP based on the internationally recommended Directly Observed Treatment, Short Course (DOTS) strategy, was implemented in five pilot sites covering a population of 2.35 million. A full-fledged DOTS programme was

begun in India in 1997 and it has been expanded in a phase manner throughout the country.

In Mizoram, RNTCP was launch on World TB Day i.e. on the 24th march 2003 for the whole state covering 8 districts simultaneously. At present there are 8 district T.B centres and 19 Microscopy Centres across the state. It has been reported by the department that, the cure rate of New Smear Positive patients during the period April 2004 – March 2005 is as high as 84.9 percent.⁶⁷

National Programme for Control of Blindness (NPCB)

NPCB was launched in the year 1976 as a 100% centrally sponsored scheme with the goal of reducing the prevalence of blindness. The goal set for the terminal year of the 10th plan is to reduce the prevalence of blindness from 1.49 to 0.08 % by 2007. It has been reported that NPCB is one of the most successful health programmes being implemented in Mizoram.⁶⁸ Under this programme priority is given to control of avoidable blindness, mainly cause by cataract by timely operation at Base Hospitals and Surgical Eye Camps at various places. As per the instruction of Govt. of India, Ministry of Health & Family Welfare, at the state and district level Blindness control Society have been established with the objectives to provide high quality eye care to the affected population, to expand coverage of eye care services to the under served areas, and to develop institutional capacity for eye care services by providing support for equipment and material and training personnel.

⁶⁷ Government of Mizoram (2005) *Annual Report, H &FW Department*, *ibid*.p.29

⁶⁸ *ibid*. p-45

Some of the important ongoing activities under NBCP includes, organizing Surgical Eye Camps/Clinics in the underserved areas and school Eyes Screening. Accordingly, Number of Cataract operation during the period from April 2000 – 2005 March is as many as 3680 in the state, of which 1478 by District Blindness Control Society (DBCS), 1717 in Hospitals, and 485 by NGOs. Reported number of school visited by different DBCS together is 248 during the period 2004-2005 and free spectacles were distributed to 795 school children.⁶⁹

Apart from the various health programmes cited above, another health programmes of great significance being implemented in the state include, Iodine Deficiency Diseases Control Programme, National Leprosy Eradication Programme, AIDS Control Programme, Drug Control Programme etc. It may not be out of place to mention that Health & Family Welfare Department, Mizoram, has set up State Mass Education and Media Wing to ensure optimum utilization of man and material resources available concerning health and the related issues.

It has been observed that the quantitative growth of government runs health facilities over time in Mizoram at the aggregate level is quite commendable. Conversely, the regional imbalance in the spatial diffusion of modern health care facility over space in different period is fairly striking. (see fig 2.2)

2:6 Health Institutions run by Private and Church Organizations

Apart from the Health institutions run by the Government, various Church organizations and private firms have established hospitals manned with qualified

⁶⁹ *ibid.* p.49.

persons with specialization in different discipline and equipped with modern diagnostic and treatment facilities.

Table 2.8

Mizoram: Status of Health Institutions Run by Church Organizations/Private, as on March 2005

Name of Hospital	No. of Beds	No. of Doctors	Year of Est.	Remarks
P.C Synod Hospital	200	15	1928(Welsh Mission)	Handed over to P.C,Synod Mizoram in 1958
Baptist Hospital, Serkawn, Lunglei	100	7	1923(BMS)	Handed over to Baptist Church, Mizoram in 1960's
7 th Day Adventist Hospital, Aizawl	30	1	1996	
Greenwood Hospital	58	5 Resident 3/5 Visiting Super Specialist	1992	Private.
Bethesda Hospital & Research Centre	40	3	7 th Feb 2005	Sponsored by Sacred Heart Society
Nazareth Medi-Tech	23	8- Residents 9 - Visiting	2005	Private

Source: Compiled from records collected from the specified Health Centres

The hospitals especially Green Wood Hospital and P.C Synod Hospital at Aizawl are well furnished. The nursing care, diagnosis and treatment given by them are quite commendable. Visiting Doctors, Super Specialists within India and abroad are engaged in these hospitals, hence the services provided by them fairly excelled that of the Government hospitals in treating critical diseases and specific ailments.

Following the footstep of the Welsh Mission, the Presbyterian Church of Mizoram apart from maintaining hospital, opened Rural Heath centre in three villages, viz, Khawdungsei (1976), Khawzawl (1977), and Khawhai (1977). However, these centres were closed after functioning smoothly for a little more than seven years in February 1984, due mainly to the various difficulties and with a hope that health service

through Mobile Clinics would be more fruitful.⁷⁰ Accordingly, mobile free clinic and eye camp, covering the various pastorates under the Presbyterian Church, located in rural areas; mostly in the Northern parts of Mizoram have continuously been conducted by doctors and technicians from the Presbyterian Church, Synod Hospital Durtlang. In recent past, during October 2003 to September 2004 alone, it has been reported that about ten thousand patients in various places of the state have been attended through such mobile clinics, free of doctor consultation fee.

Table- 2.9
Synod Hospital Durtlang: Mobile Clinic, Aug 2003- June 2005

Mobile Clinic	Number of times	No. of Patients operated	Total No. of Patients Attended
General Clinic	30	-	18992
Eye Camp	12	344	1647
Total	42	344	20637

Source: Compiled from Durtlang Hospital Medical Record Unit.

It may not be out of place to mention here the attempts on the part of the government for a better co-ordination with the Synod hospital in the field of health care. Since the second part of the year 2004, the government has set aside a Mobile Clinic Van exclusively to be used by Durtlang hospital. This facilitates the hospital to conduct the activity more frequently in different regions of the state. Since mid August 2004, the hospital on a routine, almost every Saturday opens a number of such mobile clinics. The number of patients attended during the period August 2004 to July 2005 amounts to as many as 10084 persons, which includes cases of minor operations, diagnosis through laboratory test, X-ray, ECG, Gastroscoy and Ultra Sound.(see table below)

⁷⁰ Zasiama Ralte,(1986) "History of Durtlang Hospital" in *Diamond Jubilee Souvenir*, Synod Hospital, Durtlang, Synod Publication Board, Aizawl, p.151

It is true that, in any discourse on the topic of health care facility in Mizoram, one cannot afford to ignore the role of the Church and Private organizations in providing health care services to the people living in this comparatively isolated state.

2:7 Concluding Statement

The foregoing discussion on the genesis and growth of health care facility in Mizoram leads to the following broad generalizations.

Firstly, it was the British occupation and the advent of Christian missionaries which marked the beginning of modern health care facility in the state. Introduction of western education and health care completely broke down the Mizos traditional understanding of the causes of diseases and ailments which formerly was interwoven with their animistic world view.

Secondly, two different agencies, namely, British Indian Administration (the Government) and the Christian Missionaries were the precursor of health care facilities in the state.

Thirdly, the contribution of the Missionaries in the field of both curative and preventive health care services in Mizoram was quite commendable. They were the ones who initially provided training in nursing and midwifery to the Mizos. It was the Missionaries who made concerted efforts to educate the general public on sanitation and hygiene through lectures and campaign.

Fourthly, the growth and modernization of health services took a new turn with the end of insurgency under the State Government in the form of infrastructural and

Human Resource Development, availability of qualified persons in different discipline of specialties, up to date appliances for treatment and diagnosis of various diseases.

Fifthly, as regards the regional disparity in health care services, it has been observed that under the aegis of the Missionaries, particularly of the Welsh Mission, care has been taken so as to cover the entire regions lying under their jurisdiction in Mizoram. As such, apart from maintaining hospital at Durtlang, Aizawl, they have established health centres at four diverse distant villages, each about four to six days journey on foot from Aizawl so as to cater to the needs of maximum number of people. Conversely, the growth and diffusion of modern health centres under the government shows a rather striking imbalance in the regional patterning of such centres.

Sixthly, in recent decades private firms too have begun to make investment in the field of health care. It is expected that such facilities run by private sectors would in future make greater inroads into this state as the social environment and needs by and large is conducive to the development of better health care services.

Finally, the quantitative growth and modernization of health care facilities at the state level may not necessarily lead to better utilization, if factors like accessibility and spatial distribution are taken into consideration. It is, therefore, imperative to examine the available health care facilities in relation to space, accessibility etc to properly understand actual availability and levels of utilization.

CHAPTER – III

SPATIAL PATTERNS IN AVAILABLE HEALTH CARE DELIVERY SYSTEM IN MIZORAM

3:1 Introductory Statement

The preceding chapter addressed itself to the growth of modern health care facilities since its inception in the state of Mizoram. In spite of the apparent regional imbalances in the diffusion of health care facilities, it has been observed that the growth of health facilities in the state over time at the aggregate level is quite commendable. However, mere quantitative increase in the number of health institutions at that level may not be satisfactory. What is more important is its spatial spread and the consideration of an ideal location in relation to distance and the size of population served. In order ensure better health to the people, it is necessary that health centres with adequate quality services be located in such a way that no part, *spatially* or *socially*, is left un-served.

The present chapter deals with the geographical distribution of health care facilities such as the Sub-Centres, the Main Centres (PHC, SHC, CHC)⁷¹ and Hospital

⁷¹ Primary Health Centre (PHC), Subsidiary Health Centre (SHC), Community Health Centre (CHC) collectively is connoted as Main Centre in the State.

Sub Centres are manned by I Health Worker (Male), 1 Health Worker (Female) and a IV Grade Staff each. *PHCs / SHCs* are 10 bedded institutions with a jurisdiction over 2 to 4 Sub-Centres, and are manned by a Medical and Health Officer (M&HO) i.e. Doctor, Health Supervisors, Nursing staff, Pharmacist etc.

CHC are Referral Centres with 30 beds with a jurisdiction over 4 to 5 PHCs/ SHCs. CHC were previously known as upgraded *PHC* or *Rural Hospital* and are manned generally by 2 to 5 Doctors, 7 to 15 Nursing Staff, Pharmacists etc.

SHCs are funded from the State Non-Plan Budget and should be treated at a par with PHC for all practical purposes.

etc throughout the state. It is important to keep in mind while scrutinizing the spatial distribution of such facilities that health care utilization is largely governed by factors such as availability and accessibility of health services and the attitude of an individual towards his health and the health care system. In fact, these two indicators, availability and accessibility direct our attention away from the biological aspect of diseases in a population towards the discharge of social responsibility of the organization of health care services.

The analysis here is based on the location of such facilities at different levels of spatial aggregation viz, District, Development Block and at the level of the village. It is expected that dis-aggregation of the data at such levels may help reveal certain underlying patterns and processes hidden at the highly aggregate level. The availability aspect is examined not only in absolute term or quantity of the facility available but is also examined with reference to population size. The health institution-population ratio, doctor-population ratio, Institution bed-population ratio, is regarded as appropriate measures of availability.

In this chapter special emphasis has also been laid on identifying the pattern at village level by comparing villages of the development blocks located in various part of the state. Comparison of such villages has been made with reference to nearness to urban centre and the relative isolation of the blocks where they are located and distance from the health centre, keeping in mind factors like distance have often restricted the capacity of utilizing health facilities. The attempt here is to examine the spatial inequality in the provision of health care facility at the lower aggregate level. At different levels of

spatial aggregation attempt has also been made to elicit out influences of urbanization, location and accessibility etc

3:2 District Level Patterns

In the 1991 Census, Mizoram comprised of only three districts⁷², namely, Aizawl, Lunglei and Chhimtuipui. Great disparity was observed in the distribution of population in these three districts. Out of a total population of 6, 89,756 persons in the state about two-third is confined to Aizawl district only. The remaining one-third is almost equally shared by Lunglei (16.15%) and Chhimtuipui (14.48%) districts. Aizawl District recorded a population density of 38 persons per Sq Km, whereas, Lunglei and Chhimtuipui districts accounted for 26 and 25 persons per Sq Km respectively.

3.2.1 Distribution of Health Centres

Table-3.1 reveals inter-district disparity in the provision of health institution. Aizawl district appears to be fairly better served when compared to the remaining two districts.

Till the year 1998, there were as many as ten (10) Hospitals in Mizoram, of which seven (7) were under the government, and three (3) under non-governmental agencies. Aizawl district being the largest district in terms of geographical area as also in population size claimed more than a half of the hospitals located in the state i.e.6 hospitals out of a total of 10. On the other hand Lunglei district had three Hospitals while Chhimtuipui district had a lone Hospital in Saiha.

⁷² Creation of five (5) new districts during the period 1999 – 2000 has raised the number of districts in the state to eight (8). Aizawl district was divided into four (4) hence, *Aizawl* District, *Champhai* District, *Serchhip* District and *Mamit* district. Likewise the erstwhile Chhimtuipui district was bifurcated into two to form *Saiha* District and *Lawngtlai* District.

Table 3.1
Mizoram: Inter- District Variations in Health Institutions

Name of District	Hospital	Main Centres (CHC,PHC,SHC,)	Sub-Centre	Total
Aizawl	4 (1:11916) * 6 (1:79744)	50 (1:9569)	211 (1:2268)	265 (1:1806)
Lunglei	2 (1:55708) * 3 (1:37138)	12 (1: 9284)	68 (1: 1638)	82 (1: 1359)
Chhimtuipui	1 (1:99876)	13 (1:7683)	57 (1: 1752)	71 (1:1407)
Mizoram	7 (1:98537) *10 (1:68976)	75 (1:9196)	336 (1:2053)	418 (1:1650)

* Hospital including Private Hospital.

Figures in parentheses are Health Institution-Population ratio

Source: Compiled & computed from District Primary Census Abstract, Mizoram 1991 for population, and Health Institutions as given in Handbook of Health and Family Welfare Department, Mizoram, 1998.

If one compares the proportional distribution of health institutions designated as Main Centre and Sub-Centre at the district level, one observes a similar pattern characterized by sharp inter-district disparity. In 1998, there were as many as 75 Main Centres located in various parts of Mizoram, of which two-third is located in Aizawl district alone. Twelve Main Centres (16%) were in Lunglei district and the remaining thirteen (17.33 %) were in Chhimtuipui district. Out of the total 336 odd Sub-Centres, Aizawl district alone accounted for more than half these Sub-Centres of the state (62.79 %). Lunglei district and Chhimtuipui district both shared comparatively lower proportion of health centres, i.e. about 20 percent and 17 percent respectively. The distributional patterns of health institutions at the district level broadly placed Aizawl district as fairly better served when compared to the remaining two districts as far as health provision at the district level is concerned.

District level variation in the availability of health institution can further be analyzed by comparing all types of health care institutions available in the districts in

combination without making differentiation on institutional types. In the year 1998, there were as many as four hundred health institutions (Hospital, Main Centre, Sub-Centre) in Mizoram. An overwhelming proportion of these institutions (63.40 %) were located in Aizawl district only, whereas less than a third of the state's health institutions were available in Lunglei and Chhimtuipui districts (i.e. 20 percent and 17 percent respectively).

The analysis of available health care provision at the district level therefore reveals Lunglei district and Chhimtuipui district lagging far behind Aizawl district. The pattern of available health care provision so far exhibits a positive correlation between health care provision and urbanization at the district level. Aizawl district which has as many as 18 urban centres claimed more than a half of the available health institutions in Mizoram. Lunglei and Chhimtuipui districts, each had less number of urban centres, three and one respectively, shared relatively less proportion of health institutions.

3.2.2 Health Institution-Population Ratio

What is glaring however is that a completely different picture emerged when one examines the distributional pattern of health centres with reference to population size in these three districts (Table 3:1). Aizawl district, which stood first in terms of available health institutions in fact, appears to be the worst served when Health institution–population ratio is taken into consideration. The number of people sharing one health institution, be it hospital, main centre or sub-centre is the largest in Aizawl district, when compared to the other two districts. In Aizawl district one health institution is available for every 1806 population where as, in the districts of Lunglei and Chhimtuipui at least

one health institution is available for every 1359 and 1407 persons respectively. This anomaly is expected as the concentration of people is highly uneven in the state across these three districts.

Table 3.2
Mizoram: Inter- District Health Care Facility Indicator⁷³

Name of District	Doctor – Population ratio	Institution Bed – Popn. ratio
Aizawl	* 1:3442 (139) ** 1:2917 (164)	GH 1:1025 (467) HM 1:477 (1003) AB 1:384 (1245)
Lunglei	* 1:3842 (29) ** 1:3183 (35)	GH 1:743 (150) HM 1:429 (260) AB 1:309 (360)
Chhimtuipui	* 1:5257 (19)	GH 1:1407 (71) HM 1:552 (181) AB 1:552 (181)
Mizoram	* 1:3689 (187) ** 1:3164 (218)	GH 1:1003 (688) HM 1:478 (1444) AB 1:386 (1786)

Figures in Parentheses relate to number of Doctors / Hospital Beds

* Govt. Doctor

GH = Govt. Hospital Bed

** Govt. and Private Doctor

HM= Govt. Hospital and Main Centre Bed

AB = All Institution Bed (Including Private Hospital)

Source: Compiled from Health and Family Welfare Department, Mizoram, Handbook 1998 & List of Doctors as on 29.3.1998 recorded by the same department and Private Hospitals records.

It is evident from table 3.2 that Aizawl district by virtue of its large population concentration (see Appendix –VI) appears to be somewhat the worst served when compared with the condition prevailing in the remaining two districts, viz. Chhimtuipui district and Lunglei district which contain sparse population concentration.

3.2.3 Doctor- Population Ratio

Inter-district health care differential can further be analyzed by comparing the variation in doctor-population ratio in each of these districts. Doctor-population ratio

⁷³ Government Doctors on deputation, PG Studies and on administrative services are excluded from the list and hence included only doctors on actual Public Service.

calculated for the year 1998 (table 3.2) shows, one government doctor is available for every 3688 persons in Mizoram. Out of the three districts, only Aizawl claimed a ratio above the state average (1:3688), where one government doctor serves 3442 persons. Government Doctor-population ratio for Lunglei district is 1: 3842, a little below the state average. Chhimtuipui district seems to be very poorly served as far as doctor population ratio of 1: 5257. Both Lunglei and more so in the case of Chhimtuipui district present a contradictory situation wherein there is no correspondence between the two variables of Institution-population ratio and doctor-population ratio. It may be mentioned here that these two districts, particularly the latter reveal a peculiar situation of better physical resource, but lacking significantly in the availability of human resource so vital in ensuring better health for the people of these districts.

As regards the district wise doctor–population ratio, Chhimtuipui is found to be highly deprived compared to the remaining two districts. Aizawl and Lunglei districts, both enjoy good number of qualified doctors serving in private hospitals which Chhimtuipui district relatively lacked. If one includes private doctors, the Doctor-population ratio for each district is as follows: 1:2917 for Aizawl district, 1:3138 for Lunglei district and only one doctor for every 5257 persons in Chhimtuipui district.

3.2.4 Bed-Population Ratio

Hospital bed-population ratio for the three districts shows Aizawl and Lunglei districts are relatively well served when compared to Chhimtuipui district, situated in the southern most peripheral part of Mizoram. Government Hospital bed – population ratio reveals that Chhimtuipui district alone falls below the state average (table 3:2)

Lunglei district claimed the status of the best served when measured by the criterion of government health centre bed–population ratio. It is noteworthy that by health institution we mean Hospital and Main Centres for calculating bed-population ratio, as they are the only government run health institutions that have the provision for in-patient admission with indoor beds.

As mentioned earlier, private initiatives in making health facilities available to people is confined mostly to Aizawl and to some extent in Lunglei districts while such initiatives have not taken place in a significant manner in Chhimtuipui district making the people of this district almost entirely dependent on whatever facility the Government extended. The Health Institution bed (both Govt. and Non-Govt) – Population ratio for the three districts are in the order of one bed for every 384, 309, and 552 persons respectively for Aizawl, Lunglei and Chhimtuipui districts.

The analysis of district level health care facility hence yields different results depending on the parameter used. It is, therefore, difficult to draw a coherent picture which may satisfactorily represent the overall district level situation. Health care indicator puts Aizawl district far ahead of the other two districts, but when the size of population as a factor plays its role, Aizawl district registered the worst served in absolute term of per head availability of health institution. Doctor-population ratio and Health Institution bed-population ratio both favoured Aizawl and Lunglei districts. The two indicators, doctor and hospital bed availability, may be given more weight-age as the two are considered reflective of actual delivery potential.

The different indices taken for analysis reveal that Chhimtuipui district, to certain extent, is ill-served as far as district-wise availability of health care facility is concerned. The apparent disparity facing Chhimtuipui district, however, is not very acute in terms of physical infrastructure, but certainly problematic as far as human resource is concerned. However, it may be safe to conclude that inter-district disparity as regards the available health care facility is not extremely glaring.

3:3 Block Level Patterns

The analysis of available health care facility at the district level has, so far, revealed certain interesting situations. Further disaggregation of the data at block level may strengthen the pattern already observed at the district level or may reveal a completely different picture. An attempt is now made to examine the pattern at the block level.

3.3.1 Distribution of Health centres

Table 3:3 shows the pattern of distribution of health institutions at Block level. It is evident that the extent of disparity is certainly accentuated when the number of health institutions of each block is compared. As shown in figure 3.1, inter-block differential in available health institution can be examined by classifying the blocks into different categories as differentiated by availability of health institutions. Three blocks, Tlangnuam, East Lungdar (both formed part of the undivided Aizawl district) and Lunglei have recorded the highest number of health institutions, each having more than 30 health institutions of different types. It is important to note that out of the three blocks mentioned above, two blocks, such as, Tlangnuam and Lunglei blocks contain the two

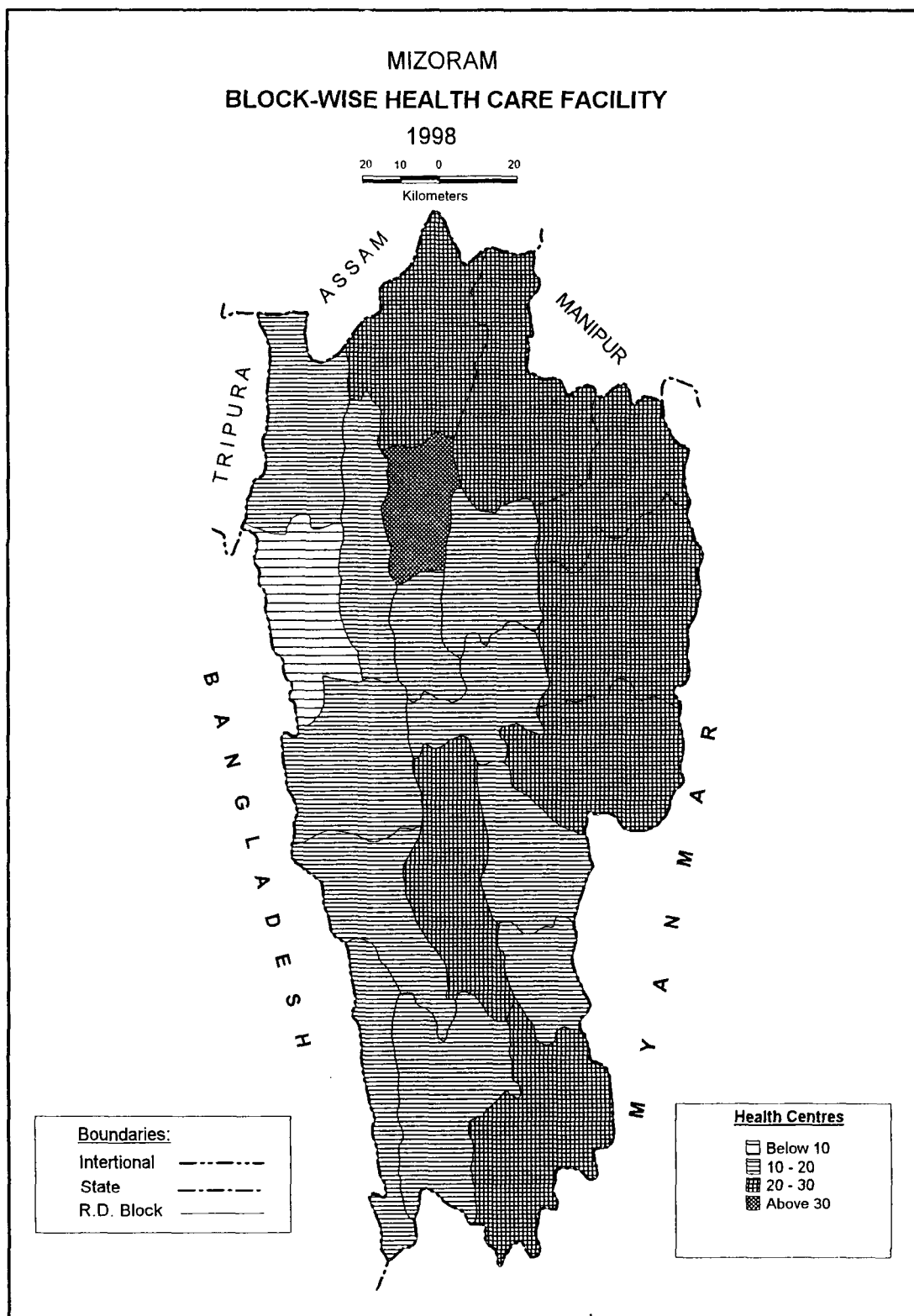


Fig. 3.1

most urbanized centres of Mizoram, Aizawl and Lunglei respectively. Urban influence may be attributed for this high concentration of health institutions in these two blocks. The third block is located in the newly created Champhai district which was formerly part of the undivided Aizawl district.

As many as twelve blocks fall in the category designated as medium. These blocks are Zawlnuam block, located in Mamit district, North Thingdawl block, located in Kolosib district, Serchhip block, located in Serchhip district, Ngopa and Khawzawl block, located in Champhai district, Darlawn block, Thingsultliah block, located in Aizawl district (all formed part of the erstwhile undivided Aizawl district) West Bnghmun and Lungsen blocks located in Lunglei district, Chawngte and Lawngtlai both formed part of the former Chhimtuipui district now located in the newly created Lawngtlai district. Availability of health institutions are fewer than 15 in as many as five blocks. These are: West Phaileng, Reiek, Aibawk (all in undivided Aizawl district), Lawngtlai and Sangau (undivided Chhimtuipui district). Out of these five blocks, all the blocks except Reiek, comprised of population entirely of rural. It is also remarkable that all these blocks except Aibawk and Reiek are truly peripheral in their location.

The analysis of inter-block health institution differential suggests that urbanization and number of health institution have a positive relationship. In other words, the spatial patterning of health centres in quantitative term is strongly influenced by urbanization or strongly biased in favour of those blocks containing urban centres.

3.3.2 Health Institution- Population Ratio

Inter-block health institution differential in absolute number or quantity may not clearly reveal the disparity aspect. Hence, health Institution - population ratio may be considered a better measure of disparity.

Table 3.3
Mizoram: Government Health Institution - Population Ratio at Block Level

Name of Block	Hospital	Main Centre (CHC,PHC,SHC)	Sub-Centre	Total
Zawlnuam		5 (1:6171)	19 (1:1624)	24 (1:1286)
W. Phaileng		3 (1:7197)	9 (1:2399)	12 (1:1799)
Reiek		3 (1:4043)	11 (1:1103)	14 (1:866)
Tlangnuam	2 *4	4 (1:42667)	32 (1:5333)	38 (1:4491)
N.Thingdawl		5 (1:8967)	18 (1:2491)	23 (1:1949)
Darlawn		3 (1:6994)	15 (1:1399)	18 (1:1166)
Aibawk		2 (1:7219)	9 (1:1604)	11 (1:1313)
Serchhip	1	4 (1:7498)	17 (1:1764)	22 (1:1363)
Thingsulthliah		3 (1:9032)	15 (1:1806)	18 (1:1505)
Ngopa		6 (1:3891)	20 (1:1167)	26 (1:898)
Khawzawl	1	5 (1:10038)	21 (1:2390)	27 (1:1859)
E. Lungdar		7 (1:4621)	25 (1:1294)	32 (1:1011)
W. Bnghmun		2 (1:7775)	13 (1:1196)	15 (1:1037)
Lungsen	1	2 (1:13248)	12 (1:2208)	15 (1:1766)
Lunglei	1 *1	5 (1:9699)	30 (1:1616)	36 (1:1347)
Hnahthial		3 (1:6959)	13 (1:1606)	16 (1:1305)
Chawngte		3 (1:8290)	12 (1:2444)	15 (1:1658)
Lawngtlai		2 (1:14665)	12 (1:2444)	15 (1:2095)
Sangau		3 (1:3582)	10 (1:1075)	13 (1:827)
Tuipang	1	5 (1:6986)	23 (1:1519)	29 (1:1204)
Mizoram	7 *10	75 (1:9196)	336 (1:2053)	418 (1:1650)
National Norm			(1: 3000)	

Figures in parentheses relate to Health Institution – Population ratio.

* Private hospital.

Source: Compiled from Village and Town Directory, Primary Census Abstract 1991, Mizoram, and Health and Family Welfare Department, Mizoram, Handbook, 1998.

It is highly possible that blocks that are better placed by the parameter of quantity of health institution, may conversely turn out to be the worst served when

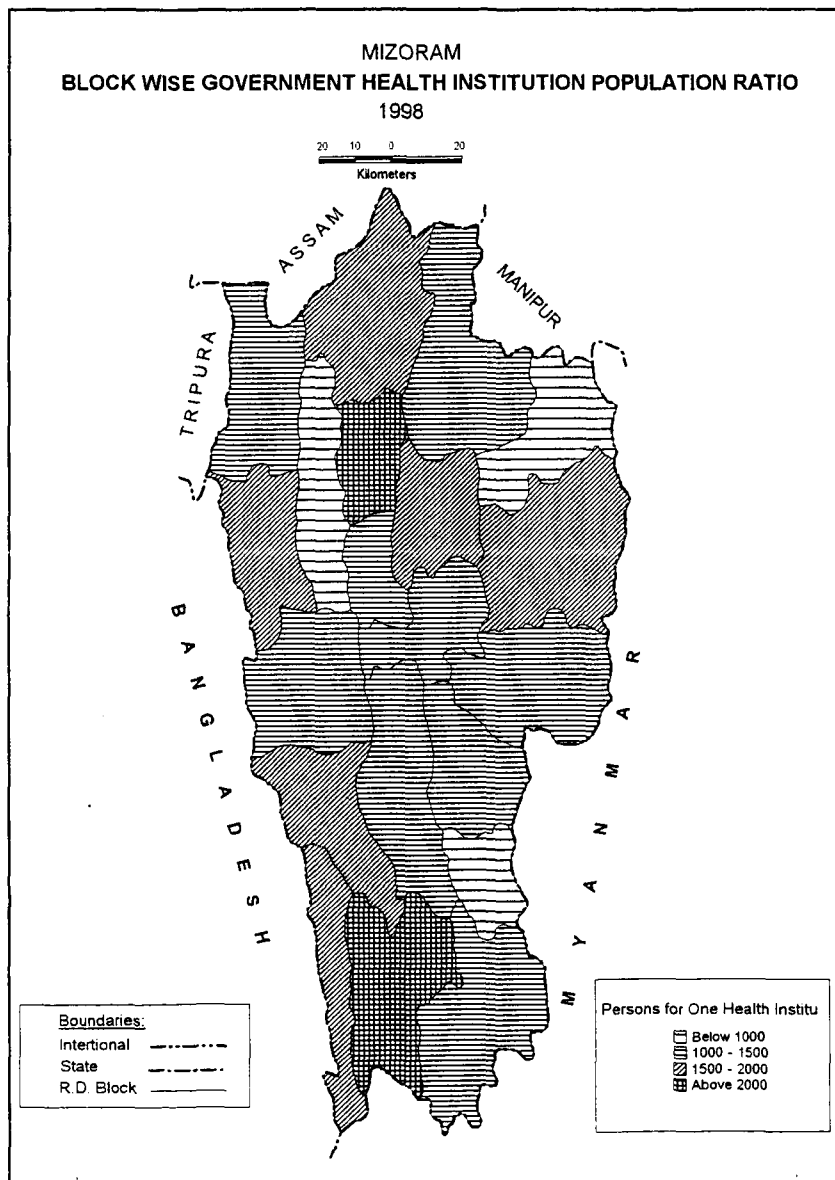


Fig. 3.2 a

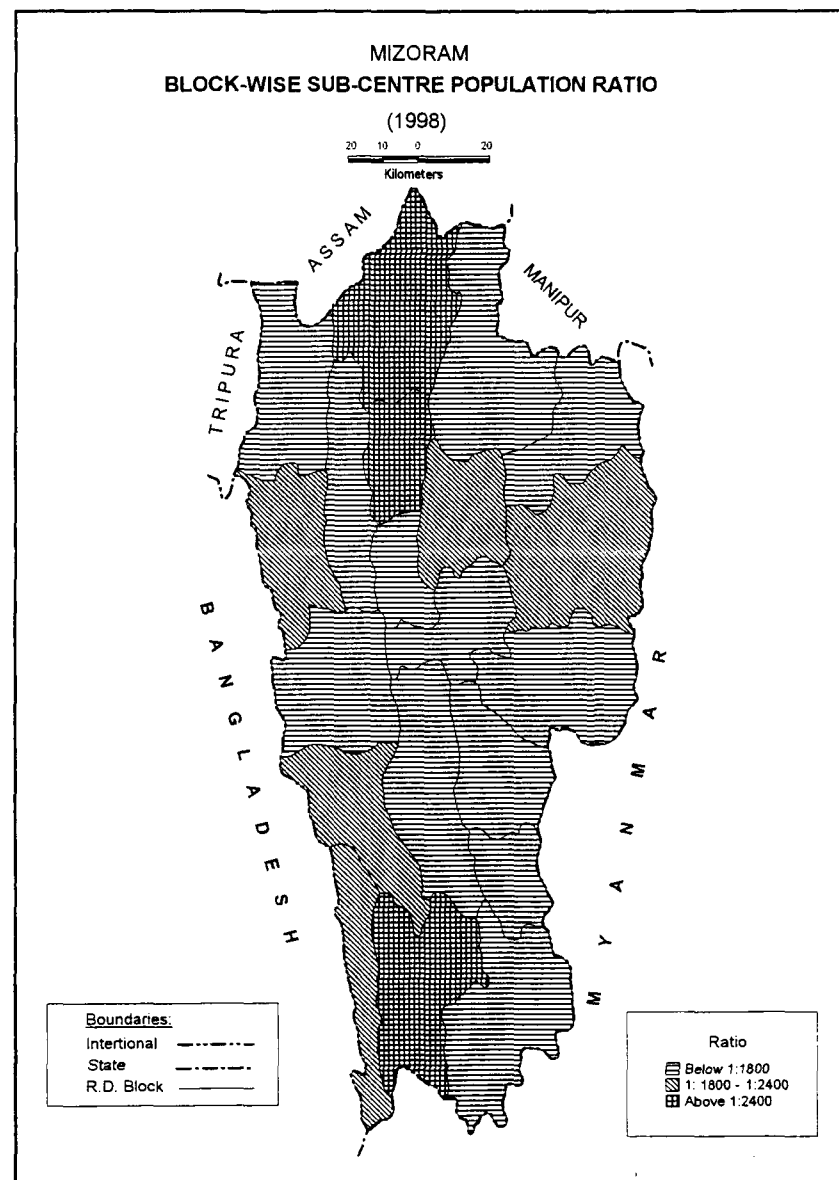


Fig. 3.2b

population served per health institution is taken into consideration. For instance, figure 3.2a shows highest disparity in terms of population served per institution is recorded by Tlangnuam (Aizawl district) and Lawngtlai blocks (Lawngtlai District, part of the erstwhile Chhimtuipui district), of which Tlangnuam block records the highest number of health institution. Tlangnuam block is the only block in Mizoram which falls below the national norms as far as Sub Centre-population ratio is concerned (Figure 3.2b).

It is evident from Health Institution - population ratio (table 3.3) that the blocks with fewer numbers of health institutions do not necessarily experience high depravity when it comes to per head availability of health care facility. West Phaileng block, now in Mamit district, Reiek block and Aibawk block (all formed part of the undivided Aizawl District), all sharing fewer number of health institutions come under either in the low or medium disparity group.

It is remarkable that Reiek block (part of Aizawl district) and Sangau block (part of former Chhimtuipui district, now Saiha district), both having very few health institutions fare much better in the health institution ratio indicator and both come under the lowest disparity category.

3.3.3 Doctor –Population Ratio

Inter-block variations in doctor-population ratio and bed-population ratio may be taken also as better measures of spatial variations in actual availability of health care services in the state.

Table 3:4
Mizoram: Government Doctor⁷⁴-Population and Bed – Population Ratio

Name of Block	Doctor – Population Ratio	Bed – Population Ratio
Zawlnuam	1: 4408 (7)	1: 441 (70)
W. Phaileng	1: 7197 (3)	1: 1080 (20)
Reiek	1: 4043 (3)	1: 404 (30)
Tlangnuam	1: 2438 (70)	1: 455 (375)
N.Thingdawl	1: 3202 (14)	1: 521 (86)
Darlawn	1: 6994 (3)	1: 699 (30)
Aibawk	1: 7220 (2)	1: 722 (20)
Serchhip	1: 3333 (9)	1: 417 (72)
Thingsulthliah	1: 5415 (5)	1: 1355 (20)
Ngopa	1: 4669 (5)	1: 292 (80)
Khawzawl	1: 4563 (11)	1: 502 (100)
E. Lungdar	1: 4621 (7)	1: 359 (90)
W. Bunghmun	1: 7775 (2)	1: 777 (20)
Lungsen	1: 8832 (3)	1: 442 (60)
Lunglei	1: 2552 (19)	1: 373 (130)
Hnahthial	1: 4175 (5)	1: 418 (50)
Chawngte	1: 8290 (3)	1: 1244 (20)
Lawngtlai	1: 5866 (5)	1: 587 (50)
Sangau	1: 5373 (2)	1: 537 (20)
Tuipang	1: 3881 (9)	1: 346 (101)
Mizoram	1: 3689 (187)	1:478 (1444)

Figures in parentheses are in absolute number.

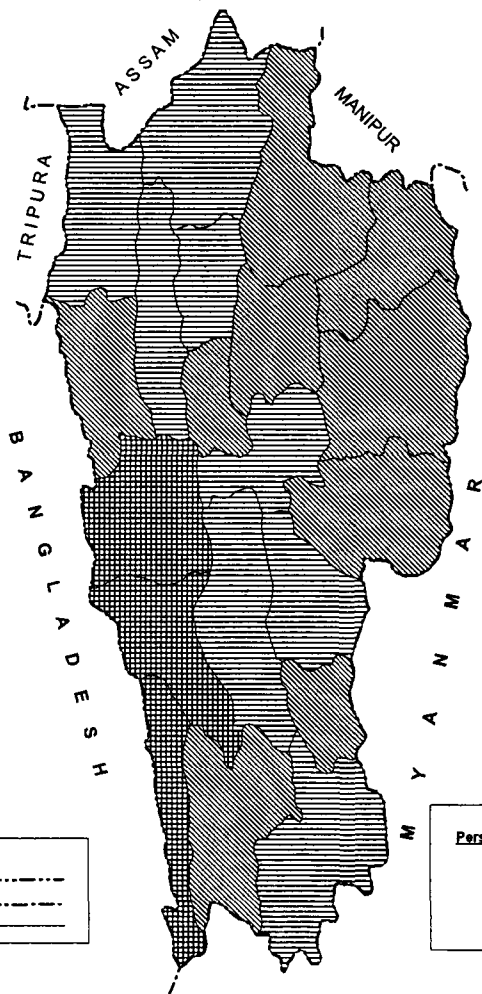
Source: Compiled from List of Govt. Doctor as on 29.3.1998, Directorate of Health and Family Welfare Department, Mizoram Record and Handbook 1998, Census of India 1991, Village and Town Directory, Mizoram.

The government doctor-population ratio calculated for the blocks (Table 3:4), depicted on the map (Fig. 3.3) shows that very high doctor-population ratio is recorded by the blocks such as West Bunghmun, Lungsen (Lunglei district) and Chawngte (Lawngtlai district), all located in the Indo-Bangladesh border. Under medium doctor population ratio there are as many as 9 blocks, such as W. Phaileng, Darlawn, Aibawk, Thingsulthliah, Ngopa, Khawzawl, E.Lungdar, (all formed part of the undivided Aizawl

⁷⁴ Doctors refer to Government Doctors in Actual Public Service and excluded Doctors on administration, deputation and P.G, Diploma Students.

MIZORAM
BLOCK-WISE DOCTOR- POPULATION RATIO
(1998)

20 10 0 20
Kilometers



Boundaries:

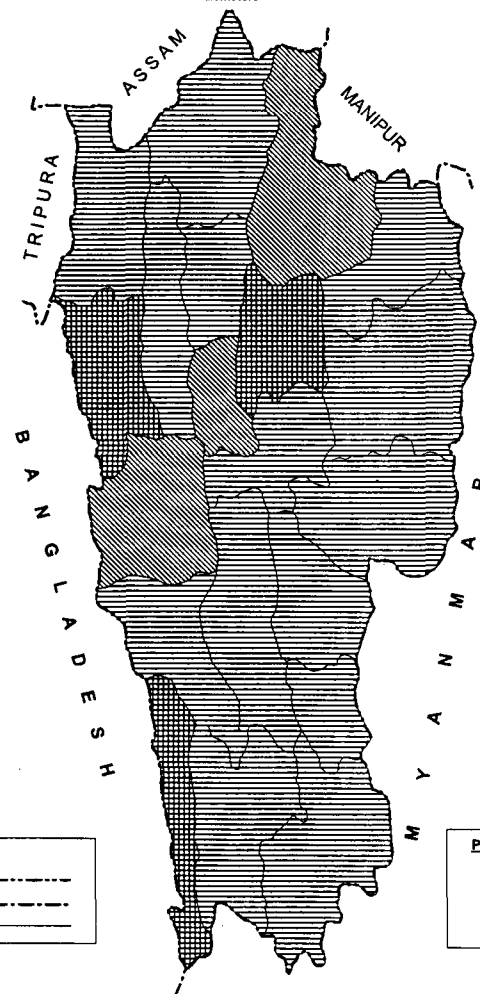
Intertional - - - - -
State - - - - -
R.D. Block - - - - -

Persons for one Doctor

Below 4500
4500 - 7500
Above 7500

MIZORAM
BLOCK-WISE HEALTH INSTITUTION BED - POPULATION RATIO
(1998)

20 10 0 20
Kilometers



Boundaries:

Intertional - - - - -
State - - - - -
R.D. Block - - - - -

Persons for one bed

Below 600
600 - 900
Above 900

Fig. 3.3

Fig. 3.4

district) and the two blocks both located in the former Chhimtuipui district in southern extreme part of the state Lawngtlai block (Lawngtlai district) and Sangau blocks (Saiha district).

The number of the blocks that are relatively better served as far as doctor population ratio is concerned is eight, viz, Zawnuam (Mamit district), Reiek and Tlangnuam block (Aizawl district), North Thingdawl (Kolasib district), all form part of undivided Aizawl district, Lunglei and Hnahthial blocks (Lunglei district) and Tuipang (part of erstwhile Chhimtuipui district now Saiha district). Among these, four blocks such as Tlangnuam, North Thingdawl, Serchhip (all formed part of the undivided Aizawl district) and Lunglei record doctor-population ratio more favourable than the state average. It is to be noted here that all these five blocks have at least one big urban centre each.

3.3.4 Institution Bed- Population Ratio

Government health institution bed-population ratio computed for the blocks suggested that very few beds per population available for in-patient treatment facility is faced by the blocks of West Phaileng (now Mamit district), Thingsulthliah, both formed part of the undivided Aizawl district, Chawngte (part of former Chhimtuipui district, now Lawngtlai district) (see Fig 3:4 and Table 3;4). Of these Chawngte block (Lawngtlai district) and West Phaileng block (Mamit district), both located in Indo-Bangladesh border again record lowest bed facility per population. Even though Thingsulthliah block comes under less served category, its proximity to the largest urban centre, Aizawl, may be considered as compensatory to the deprivation. Medium bed

Mizoram: Comparison with Meghalaya and India

Hospital Bed-Population Ratio

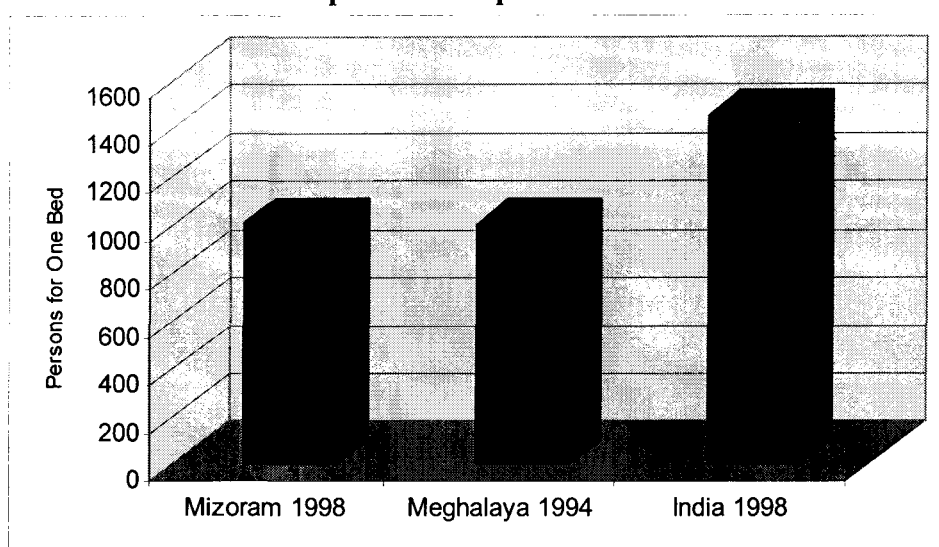


Fig. 3.5

Doctor - Population Ratio Comparison

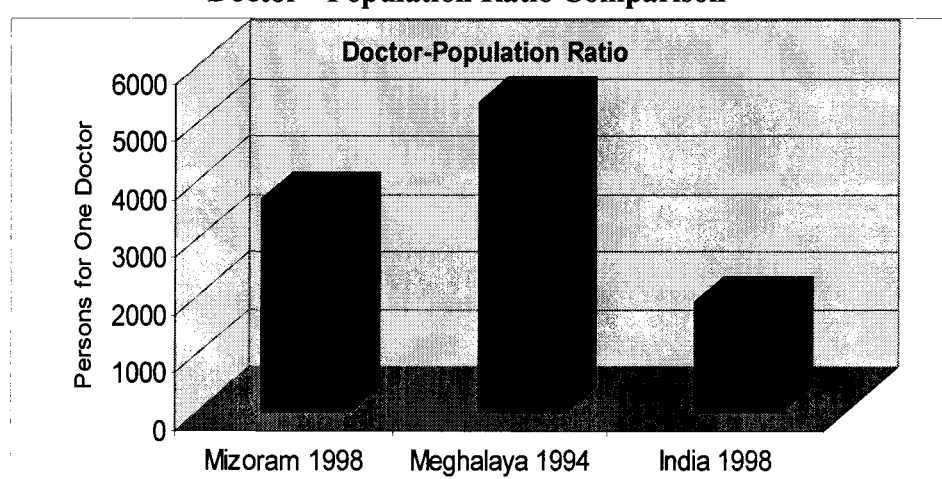


Fig. 3.5

Source: Compiled from WHO Regional Office South-East Asia: Country Reported Data on Health Indicators in *Country Health Profile-India*, [http://w3.who.org/EN/Section 313](http://w3.who.org/EN/Section%20313), Hand Book of Health and Family Welfare Department, 1998, Mizoram, Meghalaya Executive Summary report.

Note: Hospital bed- population ratio of Mizoram for the reference year is better than the National average and Meghalaya, as the number of persons for one hospital bed is fewer.

By contrast, number of persons for one doctor in Mizoram is much higher or *worst* than the National average but lower or *better* than Meghalaya in the above given years.

population ratio (1:600-1:900) is recorded by blocks such as Darlawn, Aibawk (Aizawl district) and West Bunglemun (Lunglei district).

As many as fourteen blocks come under the category of better bed population ratio indicating that more beds are available for the patients, each recording a ratio better than one bed for every 600 persons. Of the fourteen blocks, ten blocks, namely Zawnuam block (Mamit district), Ngopa block (Champhai district), E. Lungdar block (Serchhip district), all located in the undivided Aizawl district, Lungsen, Lunglei, Hnahthial blocks (Lunglei district), and Tuipang (Saiha district) registered a situation better than the state average.

The general pattern that has been observed as regards the spatial inequalities in the provision of health care facility at the block level suggests urbanization and availability of health care facility has a strong positive relationship. The blocks that registered large number of health care facility in quantitative terms are the blocks that have larger urban centres. Blocks with larger number of health institution are not necessarily the blocks which are better served when population size as a factor is taken into consideration. Disparity in the availability of health care facility is evident and is accentuated at the block level as the blocks which are located in the peripheral Indo-Bangladesh border or the blocks that contain entirely of rural population with the exception of very few blocks reveal extremely poor facility by any measure of health care facility. District level analysis did not bring out these variations so prominently.

3:4 Village Level Patterns

Analysis at the village level patterns of health care availability has been attempted for the year 1991.⁷⁵ The main facilities available in the villages are PHC/SHC, Sub-Centre and Community Health Worker. It is to be noted that a Community Health Worker (henceforth CHW) has four or five villages under his/her jurisdiction and he/she is supposed to go around such villages and take general care of the population of these villages. He/she may even stay in these villages for a few days in turn. Therefore, all such villages covered by some CHW have been considered to have medical amenities/health care facilities.⁷⁶

As shown by the table 3.5, in 1991, there were 698 odd villages in Mizoram of which more than three-fourth (79.52) is served by some kind of medical amenities. More than a quarter of the total villages have no medical amenities of any type. This indicates that nearly a quarter of the villages in the state lie outside the reach of even a CHW.

Table 3.5
Mizoram: Distribution of Villages by Availability of Medical Amenities

Sl. No.	Name of District	No. of Inhabited Village	With Medical Amenities	Without Medical Amenities
1.	Aizawl	342	298 (87.13 %)	44 (12.87 %)
2.	Lunglei	158	125 (79.115 %)	33 (20.89 %)
3.	Chhimtuipui	198	132 (66.67 %)	66 (33.33 %)
00	Mizoram	698	555 (79.51 %)	143 (20.49 %)

Source: Compiled from Census of India 1991 Town & Village Directory, Mizoram.

It is interesting to note that proportion of villages enjoying health care facility is the highest in Lunglei District (78.48 %). Villages in the Aizawl district rank second

⁷⁵ Town and Village Directory of the Census 2001 for the State was not yet ready for reference at the time of writing this thesis, hence, the 1991 Census data for examining the distance aspect.

⁷⁶ As per Census of India, villages that lie within the jurisdiction of a Community Health Worker (CHW) are considered as having medical amenity within the village.

with 72.81 percent. The percentage of villages served is the lowest in Chhimtuipui district, approximately two-third of the villages have some kind of health care facility.

Table-3.5 is indicative of the fact that villages in Aizawl and Lunglei Districts are far ahead of the villages in Chhimtuipui district as far as the proportion of villages served by some kind of health care facility is concerned. This may be attributed to the geographical location of the district in a comparatively inaccessible southern part of the state and also for historical reasons.

The pattern of health care provision at village level may broadly be generalized by differentiation of Rural Development Blocks across the state in relation to the proportion of their villages served by medical amenities.

Table 3:6
Mizoram: Proportion of Villages Served by Medical Amenities, 1991

Percentage of Villages	No. of Blocks	Block Code
90 & Above	9	3, 6, 8, 10, 11, 12, 15, 16,19
80 - 90	5	1, 2, 7, 9, 20
70 - 80	3	5, 13, 18,
60 - 70	1	14
50 - 60	1	4
Below 50	1	17

Source: Compiled from Census of India 1991, District Census Handbook, Table 12.

Figure 3.6 depicts that a very high proportion 90 percent or more villages in nine blocks enjoy medical facility of some kind. The blocks are Reiek, Darlawn, Serchhip, Ngopa, Khawzawl, East Lungdar (all located in the undivided Aizawl district), Lunglei and Hnahthial (Lunglei district) and Sangau (Saiha district, part of the erstwhile Chhimtuipui district)) located mostly in the mountainous province in the eastern part of the state. It is evident that the percentage of un-served villages in these blocks is only below 10 per cent. This further reveals that villages of nearly half a number of blocks in

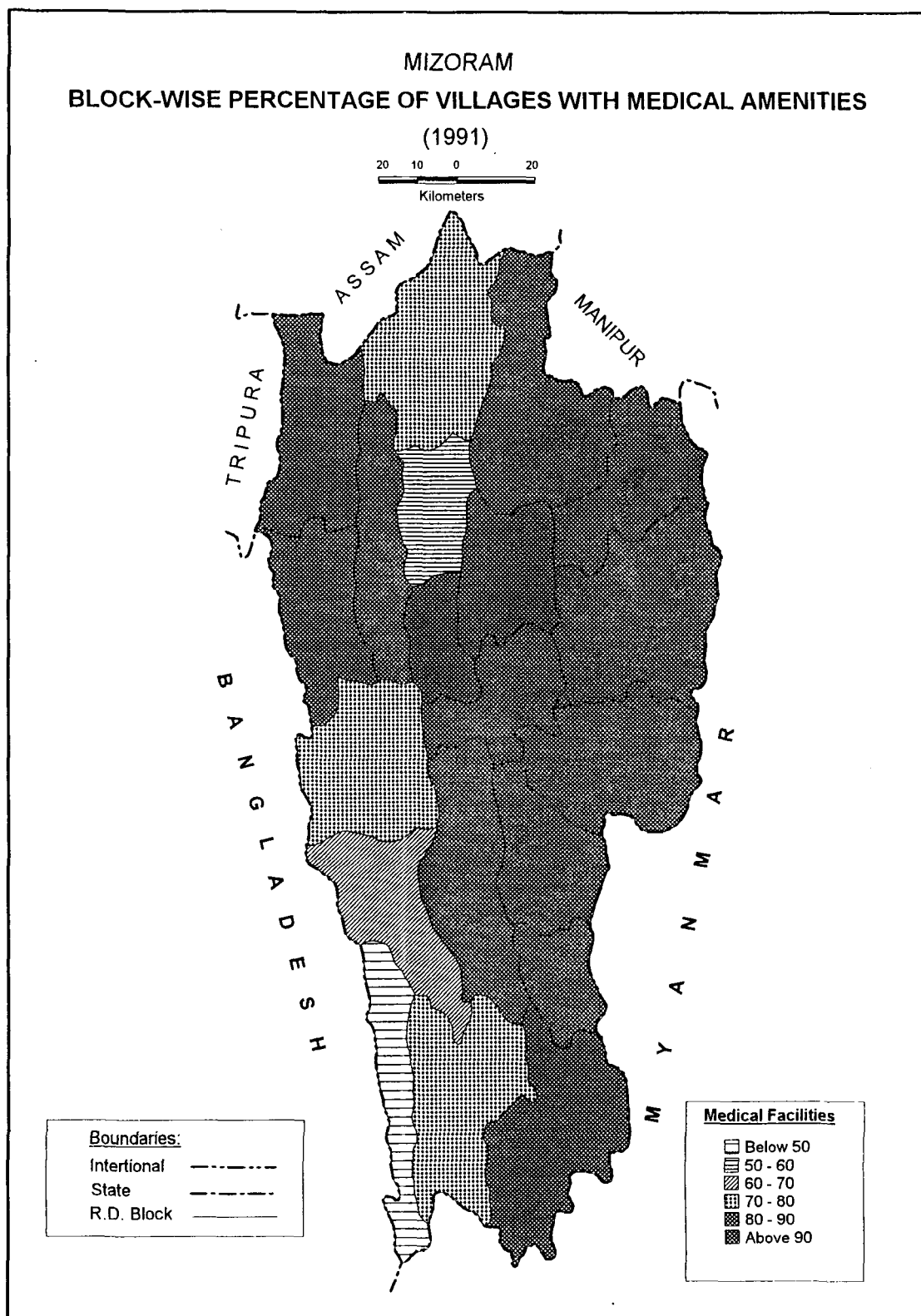


Fig. 3.6

the state are well served as more than 90 per cent of villages within the blocks have at least one health facility.

The second highest-ranking blocks with 80 to 90 per cent of their villages served by medical amenities are Zawlnuam, West Phaileng, Aibawk, Thingsulthlah (all part of the undivided Aizawl district) and Tuipang (part of the former Chhimtuipui district, now Saiha district) located in the various attitudinal zones. Three blocks, viz, North Thingdawl (Kolasib district part of the undivided Aizawl district), West Bunglei (part of Lunglei district) and Lawngtlai (part of the erstwhile Chhimtuipui district), each located near International boundary or State boundary, have a significant proportion of 70 to 80 per cent of their villages served by medical facility. The proportion of villages served by medical facility in the case of Lungsen block falls between 60 and 70 per cent. In Tlangnuam block, only 50 to 60 per cent of the villages enjoy medical facility and the remaining 40 to 50 per cent of the villages are left unserved. It is interesting to note that many villages located near the largest urban centre, Aizawl, are left unserved. Their relative nearness to the large urban centre may however be accorded as compensatory for such deficiency.

Whereas only one half of the villages in Chawngte block enjoy medical amenities of some kind, the other half villages remain unserved. It is remarkable that as many as 50 percent of the villages in Chawngte block (formerly part of Chhimtuipui district now Lawngtlai district), located in the Indo-Bangladesh border, were left even outside the care of CHWs.

The analysis of availability of health care facility at village level reveals interesting spatial patterns. The blocks lying in the eastern part of the State generally have higher proportion of their villages served by health amenities. The blocks that are situated in the western and southern most part of the state are the blocks that have the lowest proportion of villages served by medical facility. What is glaring, however, is that many villages located near Aizawl, the largest urban centre, are left un-served even by CHWs.

3.5. Distance from the Nearest Health Centre

The distance theme emphatically directs our attention away from the biological aspect of diseases in a population towards the discharge of social responsibility for the organization of health care services. Even though the attitude of an individual towards health and the health care system largely governed his utilization level it is equally affected by factors such as availability and accessibility of health services. Earickson⁷⁷ pointed out that the issue of geographic access to service is one not readily recognized by non-geographers. The authors of the book '*Access to Medical Care in the United States, Who has it who Don't*', all of whom competent professional health administration in the University of Chicago, Centre for Health Administration, never mention geographic access. Erickson accused them of neglecting geographical access to health centre and asserted that, "how far people live from or must travel to obtain medical care? The importance of the distance (or travel time) variable is too great to ignore, particularly for patient use of hospitals". Health care geography concerned itself with the analysis of health care facilities in relation to geographic variables such as,

⁷⁷ R.Earickson (1991) *op.cit.* pp.613-636.

situation, distance, the situation of regular health care services in relation to the nearest settlements, how far is the health centre from the probable utilizers' place of residence or settlement, etc. Akhtar has rightly pointed out that, 'The distance and location theme cannot be completely separated from the spatial distribution theme'.

In a hilly state like Mizoram, the importance of distance variable can hardly be overemphasized as the topography imposed severe restriction to the mobility of people, hence often restricted the capacity of utilizing health facilities. It is necessary that health centres be located rationally at a point that would lend itself the closest possible proximity to maximum number of settlements.

In the Indian context, primary health care is provided by the primary health centres and their sub centres. A majority of prevailing health complaints and problems can be satisfactorily dealt with at this level largely because this level care is closest to the people particularly for those living in rural areas.⁷⁸

The Health & Family Welfare Department of Mizoram, in its justification for the implementation the RCH programme in Mizoram, has stated that the geographical area covered by health centres, such as, Sub-Centre, PHC and CHC in Mizoram is three times bigger than the national average. As a result, patients and health facility beneficiaries had to travel double the distance travel by their counterparts elsewhere in India that too in a highly rugged terrain hilly tract to avail poorly equipped health facilities. Poor infrastructure, poor transport and communication system in rural areas where heavy landslide as a frequent phenomenon during monsoon season which often caused total

⁷⁸ K.Park (1997) *op.cit.* p.26

isolation to many of the rural areas has also been stated as one the main problems disrupting medical services.

It is true that, in a sparsely populated hilly state like Mizoram, availability in terms of population coverage per health care facility seems to be quite impressive (see Figure 3.8 a & b for Mizoram and National Norms Comparison). However, what is more important is accessibility in relation to distance of such facilities.

Table 3.7
Average Area and Distance Coverage of Sub-Centres and PHCs

State/ India	Sub-Centres		PHCs (Including SHCs)	
	Area Covered	Radial Distance	Area Covered	Radial Distance
Mizoram	85 Km	5.2 Km	468.8 Km	12.2 Km
All India	23.7 Km	2.7 Km	114.1Km	6.7 Km

Source: RCH Section, Department of Health & Family Welfare, Mizoram

Though comparison of the average area coverage and radial distance of such health centres as presented in the above table provides a rough idea on the conditions of health care facilities, generalization at that level fails to reveal the spatial inequalities in the provision of health care facilities

Table 3.8
Mizoram: Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	249	35.67
Within 5 Km	114	16.33
5 – 10 Km	83	11.89
Beyond 10 Km	252	36.11
Total	698	100
*Villages without Health Centre but served by CHW		68.15
** Villages Un-served even by CHW		20.49

* Percent to total Villages without Health Centre i.e. 449 ** Percent to all Villages i.e. 698

Source: Classified from Census of India 1991, Town and Village Directory, Series-17.

Table 3.8 presents the distribution of villages by distance from the nearest health centre or institution. This classification includes only inhabited villages without health

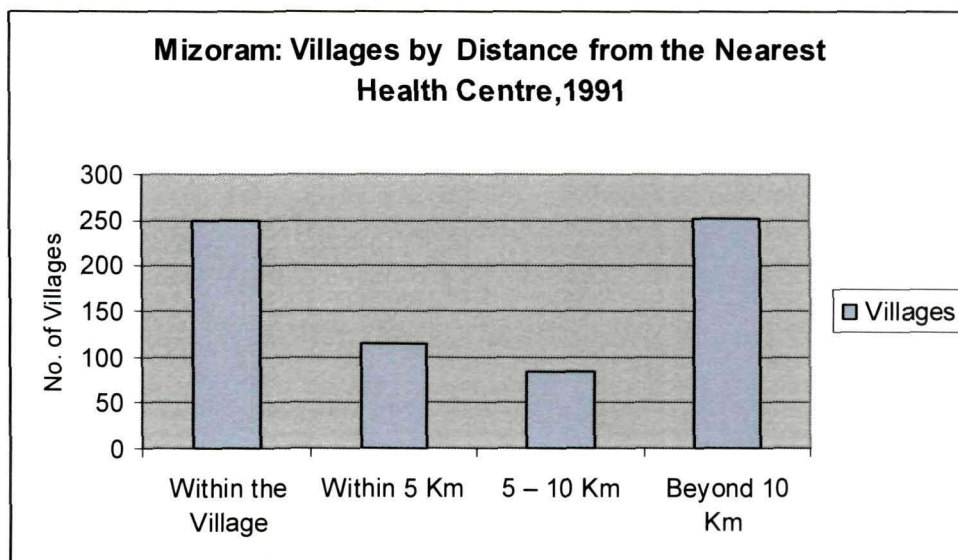


Fig. 3.7a

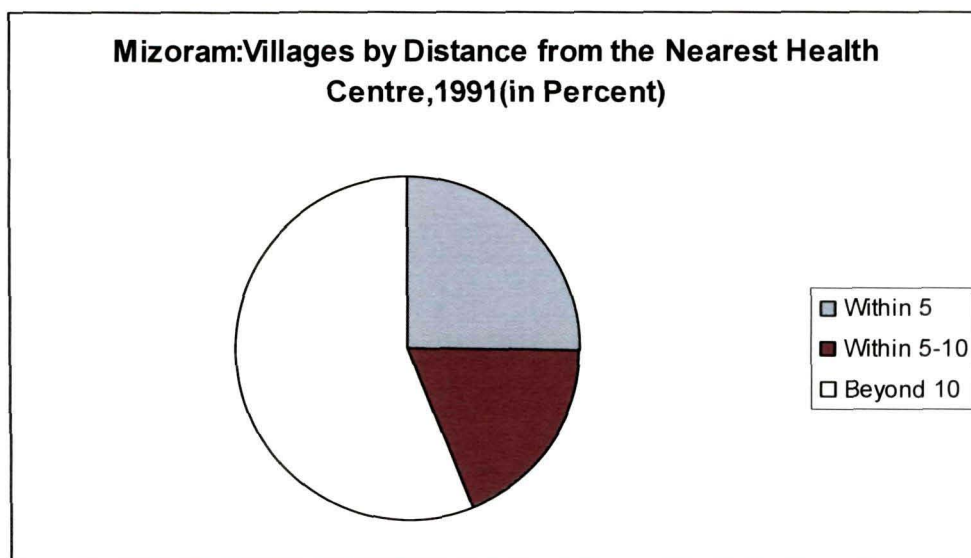


Fig. 3.7b

centre such as PHC, SHC, Sub-Centre; etc. and excludes CHW not supported by health centre/institution.

This table broadly summarized the conditions of villages in Mizoram as regards availability and accessibility of health center. In 1991, a little over one third of the villages in Mizoram had health centers within the village. Among the villages that had no health centre of any kind; villages located beyond 10 Kilometers form another one third. The remaining third villages are located within 5 Km from the nearest centre 5 to 10 Km distance (Fig. 3.7 a & b).

Differentiation of villages at such a highly aggregate level however conceals an aspect of spatial inequalities in the patterning of health care services, its accessibility and constraints in utilization of such facilities.

In order to gain better insight into the ground realities of availability, accessibility and constraints in utilization of the health centres in the state, villages of the various developmental blocks are classified, mapped in relation to their relative distance from the nearest health centres. In doing so, factors such as, relief, communication network and nearness to urban centres are given due recognition.

We may examine the pattern at the village level by reference to villages of the various *Rural Development Blocks* (henceforth Block) in the State. It should be borne in mind while scrutinizing the distance aspect of health centers, the topographical conditions of the study area particularly that of the north- south orientation of the mountain ranges. It is obvious therefore that points that appears to be very close in two dimensional maps may not necessarily be very close in actual ground distance.

Mizoram: Comparison with National Norms, 2001 (Population Served per Health Centre)

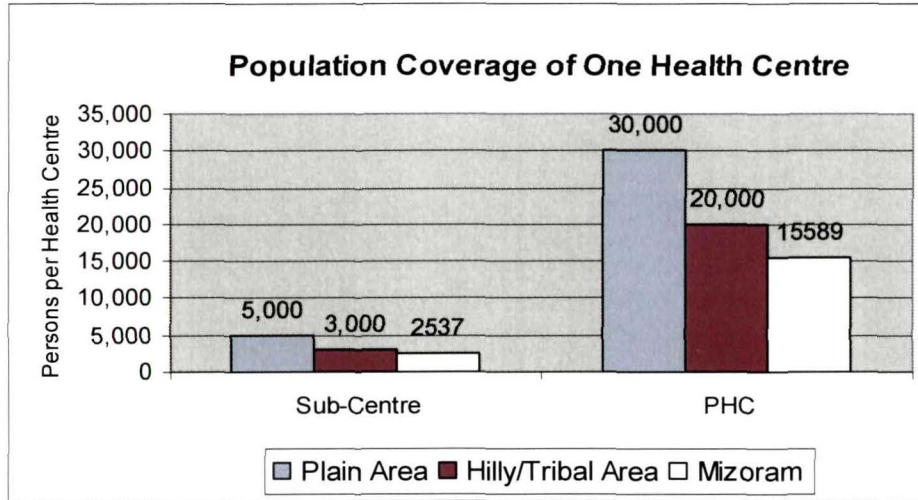


Fig. 3.8a

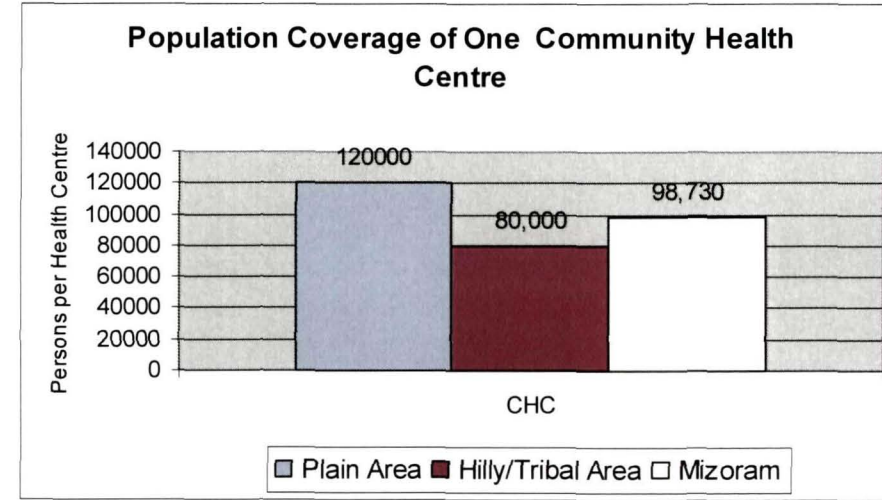


Fig. 3.8b

Note: As for Sub- Centres and Primary Health Centres (PHCs), the average population coverage in Mizoram, at the aggregate level is better than the National Norms. However, the average population coverage of Community Health Centres (CHCs) in Mizoram falls below the National Norm for hilly and tribal area.

For the convenience of comparison, the R. D Blocks in Mizoram may broadly be divided as, blocks located in the high altitudinal zone, blocks located in middle ridges of medium altitudinal zone and those block located in comparatively low altitudinal zone. Further differentiation may also be made on those blocks containing urban population and blocks containing entirely of rural population.

3.5.1 Blocks in High Altitudinal Zone with Urban Centre

This region broadly corresponds to the eastern most extension of the mountainous region in Mizoram.

Khawzawl Block

Adjacent to the Indo-Myanmar border spreads Khawzawl Block to form the eastern most territory of the state. This block is the largest R.D block in the state and occupies about 1588 Sq.Km.⁷⁹ It also contains three urban areas, viz, Champhai, Khawzawl and Khawhai. The elevation falls in between 1000m and above 1500m.

Table 3.9
Khawzawl Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	14	37.84
Within 5 Km	2	05.40
5 – 10 Km	4	10.81
Beyond 10 Km	17	45.95
Total	37	100
*Villages without Health Centre but served by CHW		86.96
**Villages Un-served even by CHW		08.11

* Percent to total Villages without Health Centre i.e. 23 ** Percent to all Villages i.e. 37

The analysis concerning health provision at the block level, earlier in this chapter placed Khawzawl block somewhere in medium served category. The table 3.9 illustrates

⁷⁹ The area of the blocks cited in this study refers to the Office record, Land Revenue & Settlement Department, Government of Mizoram.

MIZORAM
KHAWZAWL R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991

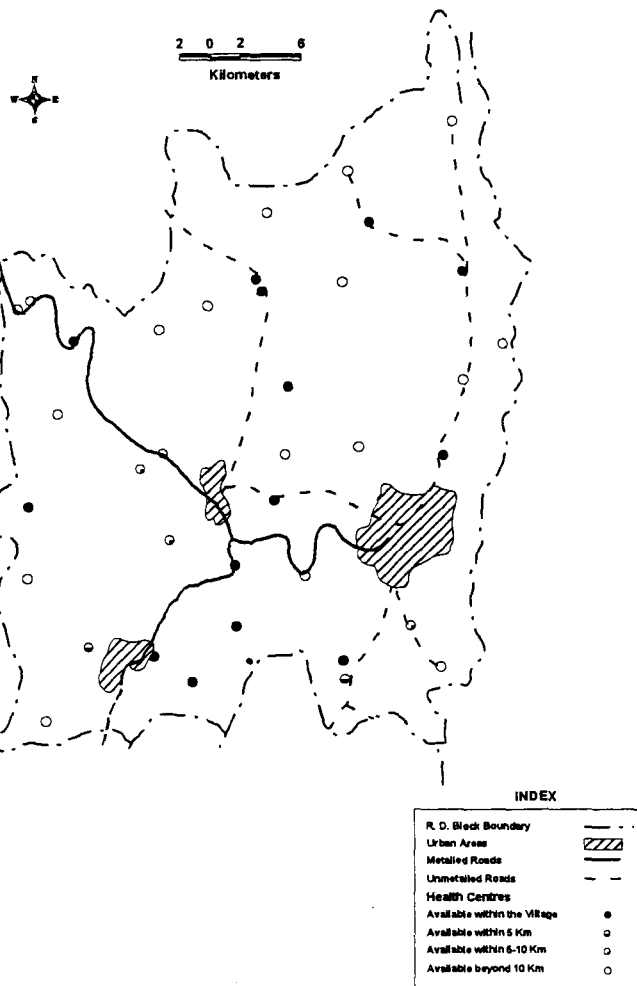


Fig. 3.9

MIZORAM
TUIPANG R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991

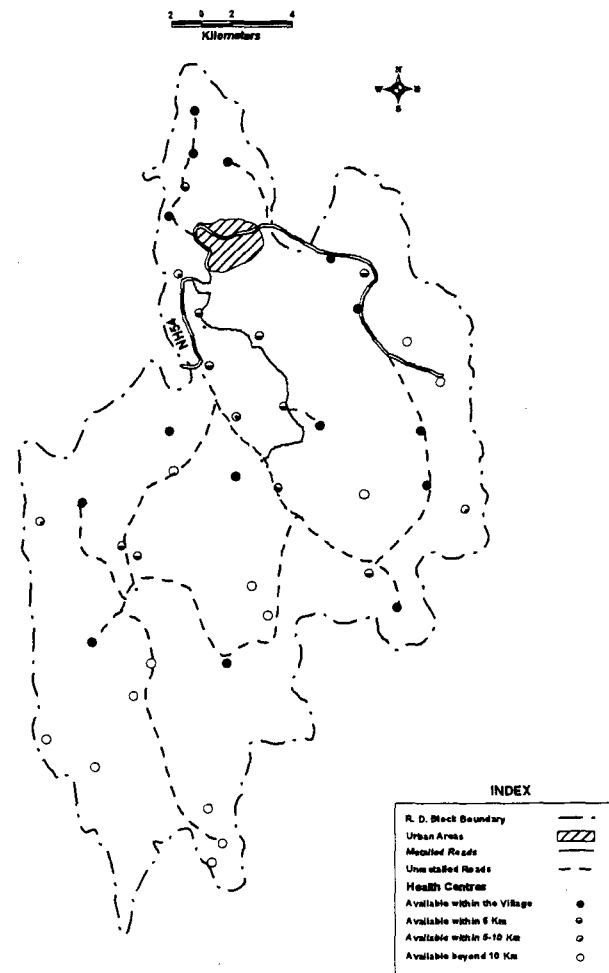


Fig. 3.10

how villages are differentiated by distance and availability of the health centres. The proportion of villages having health centre accounts for more than one third of the villages with the percentage share of about 37 percent whereas, villages located within 5 Km and 5 to 10 Km from the nearest health centre accounted for a relatively low proportion. Constraints have increased for nearly half the villages (45.95 %) in this block as many villages are all located beyond 10 Km from the nearest health center without any motorable link roads (Fig.3.9). However, among those villages without health centre, villages which remained unserved by CHW form a very low proportion of 8.11 percent only. The dispersion of villages elsewhere in this block characterize by difficult terrain would certainly have worsen the utilization level of health centres in this block.

Tuipang block

Tuipang block is situated in the south-eastern extreme corner of the state in a relatively high altitudinal zone to form part of the mountainous region of the state near Burma border. It embraces roughly 1400 Sq.Km of land surface with altitude ranges from 800m to 2000m above mean sea level.

Table 3.10
Tuipang Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	23	46.00
Within 5 Km	10	20.00
5 – 10 Km	4	08.00
Beyond 10 Km	13	26.00
Total	50	100
*Villages without Health Centre but served by CHW		77.78
**Villages Un-served even by CHW		12.00

* Percent to total Villages without Health Centre i.e.27 ** Percent to all Villages i.e. 50

As has been noted earlier, in terms of bed-population ratio, this block interestingly records, a situation better than the state average but a doctor-population ratio slightly worst than the state average. The above table shows villages that have health centre forms a considerably high proportion of nearly half the villages (see table 3.10). The villagers who settled in 20 percent of the villages need to go only five kilometers to avail of services in the nearest health centre. However, a significant proportion of about 26 percent villages are located beyond 10 Km from the nearest health centre which scattered mostly in the southern and eastern parts of the block (Fig.3.10). Villages located outside the care of CHWs however accounts for a low proportion, about 12 percent out of the total 50 villages.

East Lungdar Block

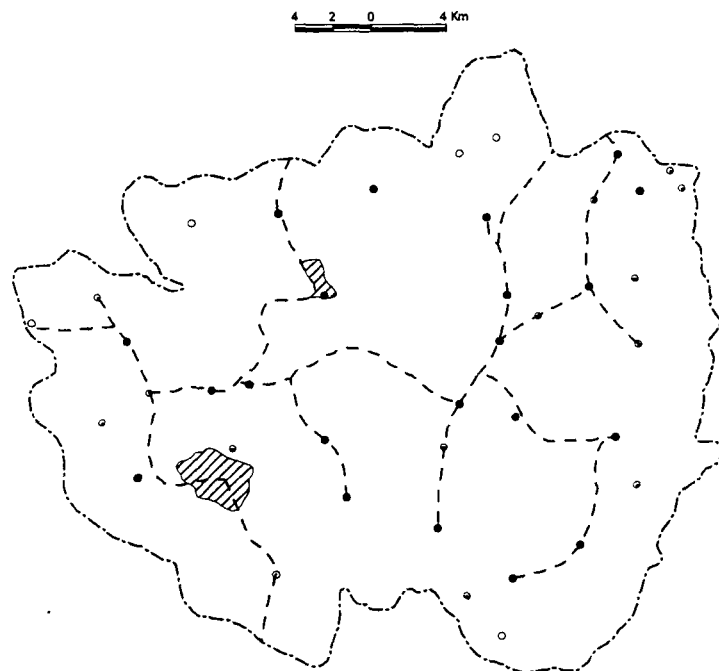
Another block which forms the eastern frontiers of the state adjoining Myanmar border is East Lungdar block which lies in a relatively fragile hill eco-system in a fairly high altitudinal zone, 900m to above 1800m from mean sea-level. This block embraces about 1328 Sq.Km. of land area.

Table 3.11
E.Lungdar Block:Distribution of Villages by Distance from the Nearest Health Centre1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	20	51.28
Within 5 Km	5	12.82
5 – 10 Km	8	20.52
Beyond 10 Km	6	15.38
Total	39	100
*Villages without Health Centre but served by CHW		84.21
**Villages Un-served even by CHW		7.69

* Percent to total Villages without Health Centre i.e. 19 ** Percent to all Villages i.e. 39

MIZORAM
EAST LUNG DAR R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991

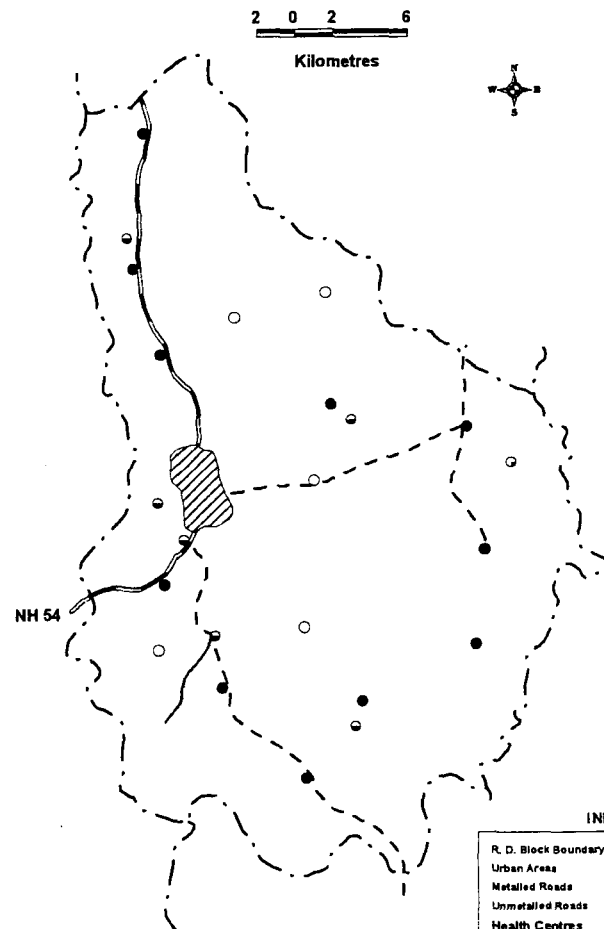


INDEX

R. D. Block Boundary	---
Urban Area	▨
Metalled Roads	—
Unmetalled Roads	- - -
Health Centres	
Available within the Village	●
Available within 5 Km	●
Available within 5-10 Km	○
Available beyond 10 Km	○

Fig. 3.11

MIZORAM
HNAHTHIAL R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991



INDEX

R. D. Block Boundary	---
Urban Area	▨
Metalled Roads	—
Unmetalled Roads	- - -
Health Centres	
Available within the Village	●
Available within 5 Km	●
Available within 5-10 Km	○
Available beyond 10 Km	○

Fig. 3.12

It has been observed in the previous analysis of health care differential that East Lungdar Block records low disparity as regards its bed-population ratio and has its doctor- population ratio better than the state average. This impressive situation is further strengthened when the data is scrutinized at village level.

Where as a little more than half the villages in this block have health centre, a high majority villages without health centre are otherwise served by CHWs, leaving a relatively low proportion villages, 7.69 percent, as unserved (Table 3.11). Although the rural dwellers of a little more than one third villages in this block need to travel 5 to 10 and beyond 10 Kilometres to deliver health services in any of the nearest health centres. It is impressive, however, that most of these villages are connected by motor-able roads (Fig.3.11).

Hnahthial block

Alongside Lunglei block but close to the Indo-Myanmar border in a much higher altitudinal zone lies Hnahthial block. With a total land surface coverage of a little over 985 Sq.Km the general elevation of the block ranges from 1100m to 1600m near Myanmar border. The NH- 54 traversed the western part of this block and passed through the only urban centre i.e. Hnahthial town (Fig. 3.12).

Table 3.12
Hnahthial Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	11	47.82
Within 5 Km	6	26.09
5 – 10 Km	1	04.35
Beyond 10 Km	5	21.74
Total	23	100
*Villages without Health Centre but served by CHW		83.33
**Villages Un-served even by CHW		8.70

* Percent to total Villages without Health Centre i.e. 12 ** Percent to all Villages i.e. 23

Hnahthial block has formerly been identified as registering medium disparity when measured by the variables such as, doctor-population ratio and bed-population ratio. It is evident from table 3.12 that the availability of health centres and the distance variable broadly differentiated villages of this block in which nearly half of the villages has health centre where as a litter higher proportion than that has no health centre within the village. Villages without any health centres but lie within close proximity to such centres, less than 5 Km formed the highest proportion (26.09 %). However, the residents of some five villages in this block need to cross at least 10 Kilometres to avail health services even in the nearest health centre. Large majority of the villages without health centres in this block are otherwise looked after by CHWs so that villages without being attended by CHWs constitute a very low proportion, less than 9 percent.

3.5.2 Blocks in High Altitudinal zone entirely Rural

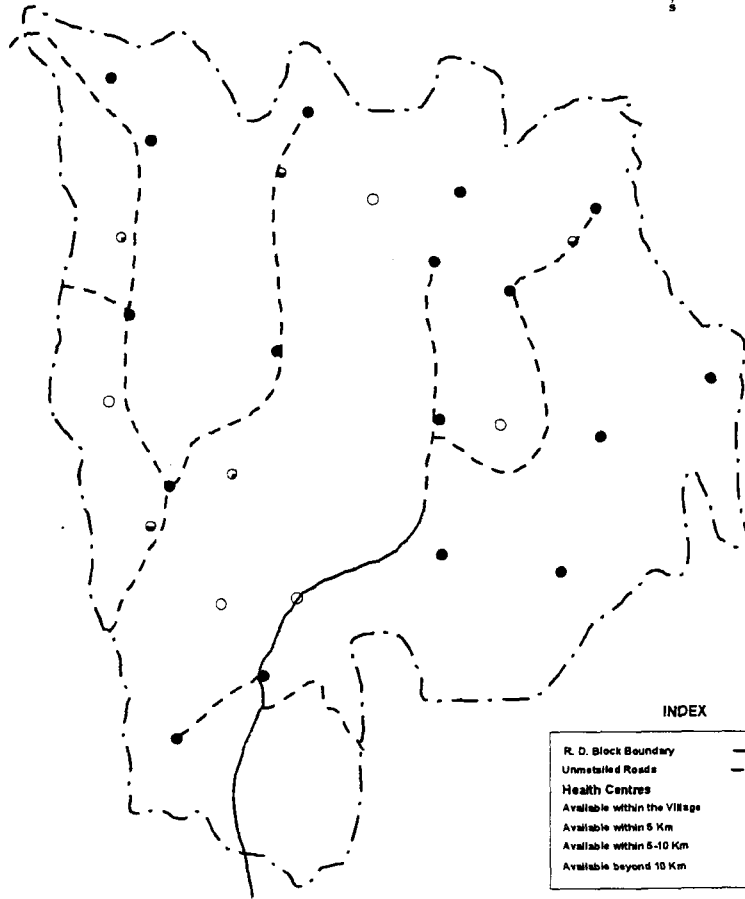
Ngopa Block

In the north, this block forms part of the eastern frontiers of the state near the border of Manipur in the north and Myanmar in the east. It covers surface area of about 1407 Sq. Km with elevation ranges from minimum 1000m to above 1200m. Rural settlements of varying size scattered through out the block without any tendency of clustering in few favourable spots (Fig. 3.13).

The analysis of inter-blocks differential in health care provision before has roughly placed Ngopa block in the medium served area. Table 3.13 broadly encapsulates the inter-village differential in available health care facility of this block. Out of the 28 villages of this block a high proportion about 64 percent has health centre.

MIZORAM
NGOPA R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991

2 0 2 6
Kilometres



INDEX

R. D. Block Boundary	- - -
Unmetalled Roads	- . - .
Health Centres	
Available within the Village	●
Available within 5 Km	○
Available within 5-10 Km	○
Available beyond 10 Km	○

MIZORAM
SANGALI R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991

4 2 0 4
Kilometres



INDEX

R. D. Block Boundary	- - -
Unmetalled Roads	- . - .
Health Centres	
Available within the Village	●
Available within 5 Km	○
Available within 5-10 Km	○
Available beyond 10 Km	○

Fig. 3.13

Fig. 3.14

Table 3.13

Ngopa Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	18	64.29
Within 5 Km	3	10.71
5 – 10 Km	2	07.14
Beyond 10 Km	5	17.86
Total	28	100
*Villages without Health Centre but served by CHW		80.00
**Villages Un-served even by CHW		07.14

* Percent to total Villages without Health Centre i.e. 10 ** Percent to all Villages i.e. 28

Whereas residents of three villages need to go less than 5 kilometres to avail of services in the nearest health centre, village folks in two settlements need to cross 5 Km to 10 Km for delivery of health care services. Delivery of health care services for settlers of some five villages in this block appears to be partly restricted by geographical distance for they all need to traverse at least 10 Km to reach the nearest health centre. The proportion of villages lying outside the care of CHW however is quite insignificant.

Sangau Block

Sangau block, the second smallest block of the state lies in the loftiest part of the mountainous region of the state. It covers an area of only about 566 Sq.Km with the elevation ranges from 1200m to 2000m above sea-level.

Table 3.14

Sangau Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	9	52.94
Within 5 Km	1	05.88
5 – 10 Km	2	11.76
Beyond 10 Km	5	29.41
Total	17	100
*Villages without Health Centre but served by CHW		87.50
**Villages Un-served even by CHW		5.88

* Percent to total Villages without Health Centre i.e. 8 ** Percent to all Villages i.e. 17

Sangau block has so far been recognized as the block which falls around the medium disparity group. Villages which have health centre accounted for a significant proportion, a little higher than half the villages (Table 3.14). Out of the remaining villages which has no health centre villages located beyond 10 Km from the nearest health centre however form the largest proportion.

Unlike the other adjacent blocks that are located in the southern most part of the state this block has relatively fewer proportion of villages unserved by the CHWs. Villages which have no health centre but far off from such centres are chiefly to be found along the margin of the block (Fig. 3.14).

3.5.3 Blocks in Medium Altitudinal Zone with Urban Centre

The entire middle ranges of the state, encompassing part of the eastern mountainous region and the ridges and valley region of the western half of the state, can be classified as the medium altitudinal zone.

Reiek Block

Reiek Block spreads to the east of the two western most blocks of the state Zawnuam and W.Phaileng. This block extends in somewhat elongated shape from north to south covering a total area of about 937.42 Sq Kilometres. This block depicts altitudinal differences of minimum 600m to as high as 1465 metres at Reiek peak.

The block exhibits medium to low disparity situation when measured by certain standards of health indicators mainly because of its low population content. In 1991, there were as many as 24 villages spreading all over the block.

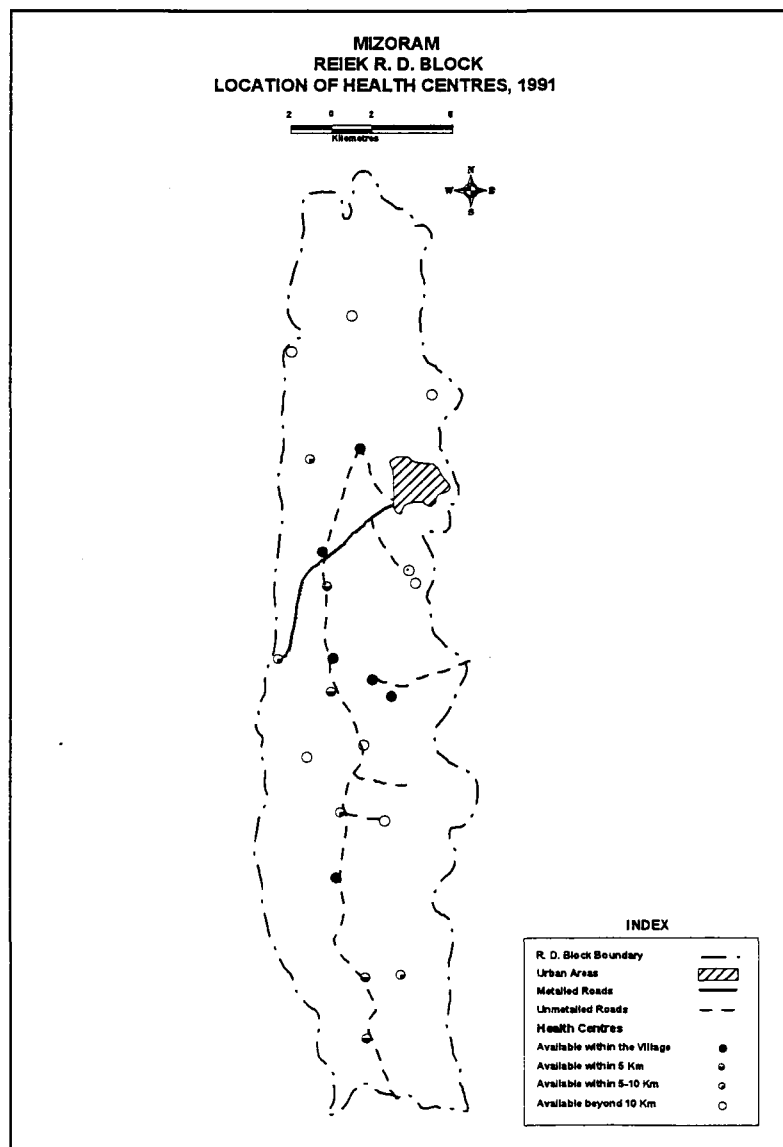


Fig. 3.15

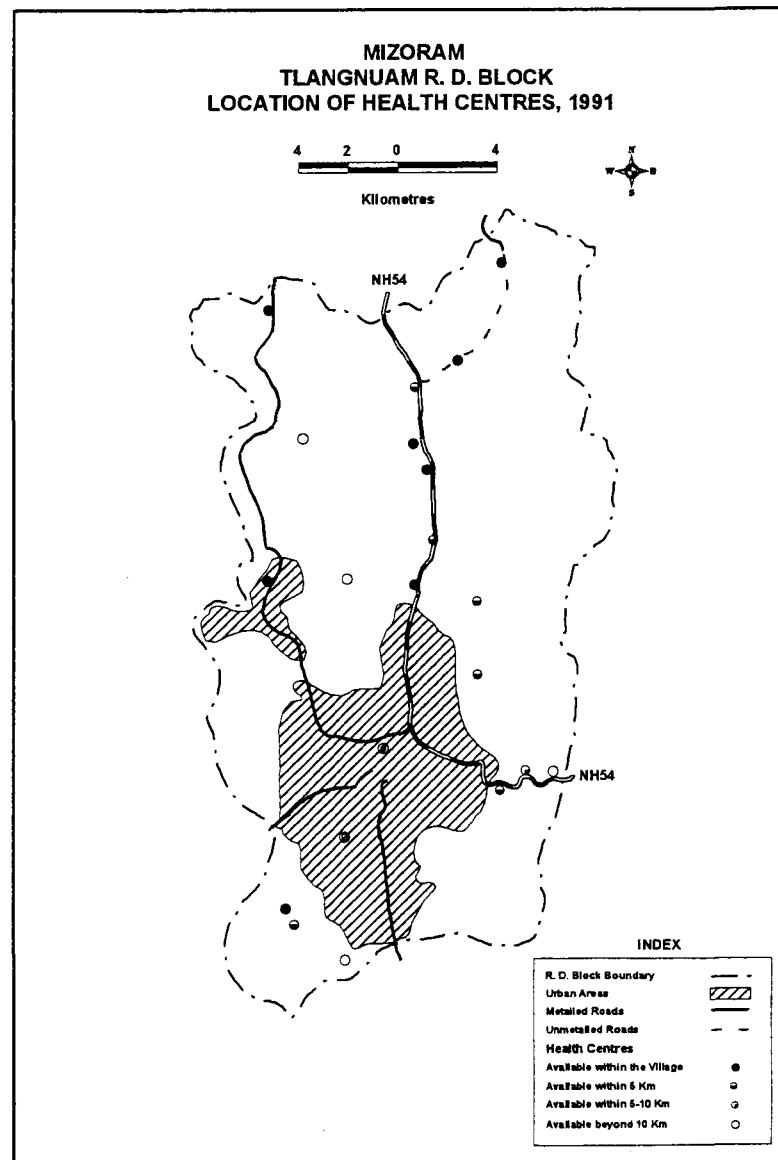


Fig. 3.16

Table 3.15
Reiek Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	8	33.33
Within 5 Km	4	16.67
5 – 10 Km	4	16.67
Beyond 10 Km	8	33.33
Total	24	100
*Villages without Health Centre but served by CHW		100
**Villages Un-served even by CHW		-

* Percent to total Villages without Health Centre i.e.16 ** Percent to all Villages i.e. 24

Table 3.15 summarizes the actual health care delivery potential of rural settlements in Reiek block. It is remarkable that a very high proportion of villages, about one-third has health centre inside the village. However, another one third is located beyond 10 kilometres from the nearest health centre. Health care delivery potential represented by distance variable indicates, villages in Reiek block are better off than many other villages in Mizoram, as far as the empirical situation of health care facility is concerned (Fig.3.15). It may be noted that none of the villages in this block is left as unserved by CHWs.

Tlangnuam Block

This block contains the largest urban settlement and the capital of the state, Aizawl. As noted earlier, this block contained a very high proportion of the health centres of the state but the population health centre ratio of the block is not very impressive largely due to the high concentration of population in this urban centre. It is more pertinent to examine the empirical situation at village level particularly for this block. The block forms part of the middle ridges with an elevation ranging from 600-1220 m.

Table 3.16

Tlangnuam Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	6	35.29
Within 5 Km	6	35.29
5 – 10 Km	1	05.89
Beyond 10 Km	4	23.53
Total	17	100
*Villages without Health Centre but served by CHW		27.27
**Villages Un-served even by CHW		47.60

* Percent to total Villages without Health Centre i.e. 11 ** Percent to all Villages i.e. 17

In 1991, the block had 17 rural settlements mostly located along the main arteries of road communication (fig.3.16). A little more than one-third villages in this block have health centres and another one third lies within a range of 5 kilometres distance. Villages located beyond 10 Km distance from any of the health centre form a substantial proportion, a little below 24 percent or one fourth of the total villages. Out of the 17 rural settlements the proportion of villages not served even by the CHW is little higher than 47 per cent (Table 3.16). The village level pattern of health care facility for the most urbanized block, Tlangnuam is not as impressive as one would expect.

Darlawn Block

This block spreads in the northern most part of the state bounded by the states Assam in the north and Manipur in the northeast. The total land area of Darlawn block is 947.87 Sq.Km. with an altitudinal range varying from a minimum of below 300 metres to a maximum higher than 1200 metres at places. With the exception of few villages, the distributional pattern of villages exhibits somewhat a linear arrangement along the main road (Fig.3.17).

Table 3.17

Darlawn Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	17	60.71
Within 5 Km	4	14.29
5 – 10 Km	2	07.14
Beyond 10 Km	5	17.86
Total	28	100
*Villages without Health Centre but served by CHW		90.91
**Villages Un-served even by CHW		03.57

* Percent to total Villages without Health Centre i.e. 11 ** Percent to all Villages

As evidenced by the above table villages in this block are better off compared to many villages of other blocks as far as access to the health care facility is concerned. More than a half the villages contain health centre within the village and the proportion of villages left outside the care of CHW is fairly insignificant.

Thingsulthliah Block

Situated in the interior region, this block occupies a little more than 874 Sq. Km of land area. The elevation of the highest and the lowest point ranges from 300m to more than 1200m.

Table 3.18

Thingsulthliah Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	7	28
Within 5 Km	7	28
5 – 10 Km	4	16
Beyond 10 Km	7	28
Total	25	100
*Villages without Health Centre but served by CHW		77.78
**Villages Un-served even by CHW		16

* Percent to total Villages without Health Centre i.e. 18 ** Percent to all Villages i.e. 25

MIZORAM
DARLAWN R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991

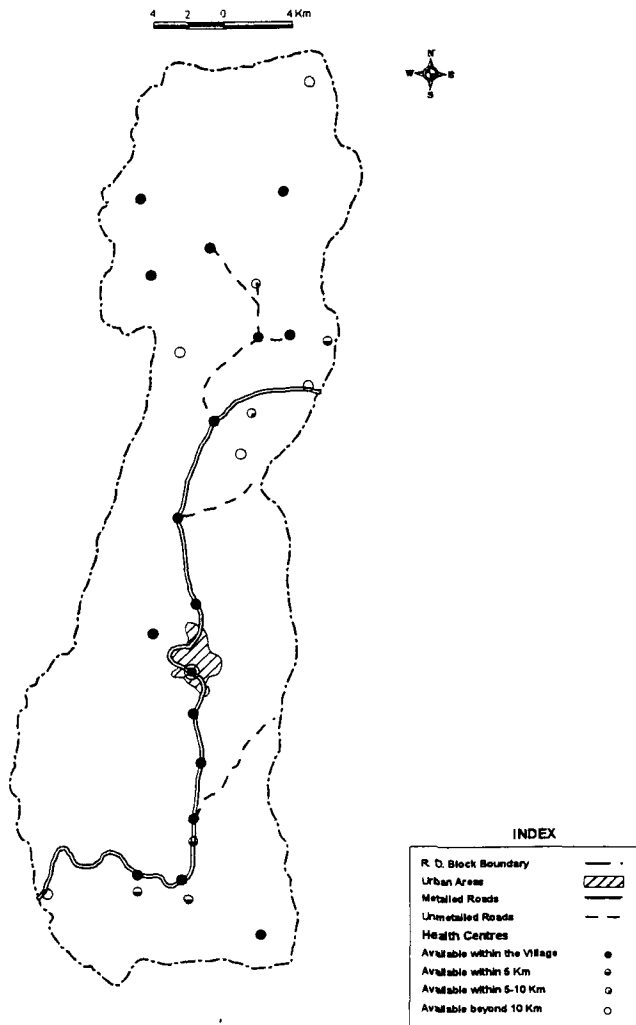


Fig. 3.17

MIZORAM
THINGSULTHLIAH R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991

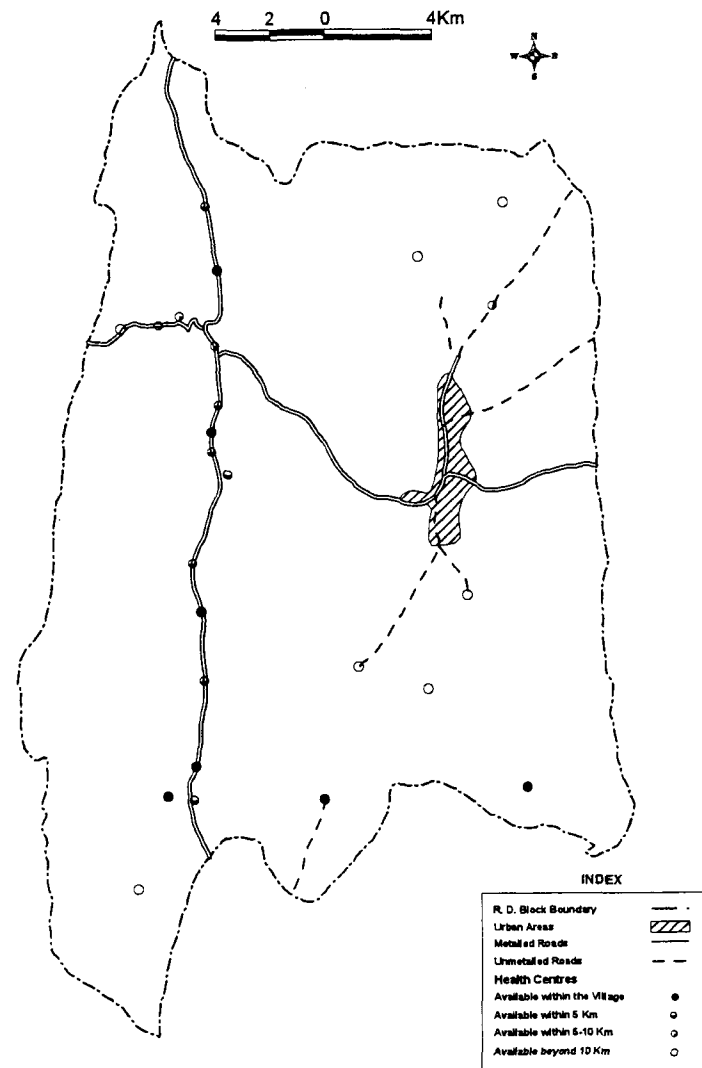


Fig. 3.18

It has been noted earlier at the block level analysis that Thingsulthliah block is one of those areas which is relatively better served as far as doctor availability is concerned, but not so as far as bed availability is taken into consideration.

It is apparent from the table 3.18; that the number of villages that has health centre in this block is very few with a proportion of about 28 percent of the total villages. The proportion of villages that lie outside the care of CHW is 16 percent. Among villages without health centre, those located beyond 10 kilometres from the nearest health centre shared the largest proportion along with those located within 5 Km. A large majority of villages far away from the health centre are located mostly in the eastern part of the block (Fig. 3.18). Considering the relief constraint, it may be concluded that villages in the western half of the block have better access to health institution when compared to their counterpart villages locate in the eastern half as they are mostly located along the major transportation line i.e. the NH- 54.

Serchhip Block

The block occupies about 798 Square kilometres of land area at the very hearth of Mizoram. The altitudinal difference between the highest and the lowest points of this block is fairly sharp i.e. minimum 600m and maximum above 1200m.

Table 3.19
Serchhip Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	12	75.00
Within 5 Km	-	-
5 – 10 Km	1	06.25
Beyond 10 Km	3	18.75
Total	16	100
*Villages without Health Centre but served by CHW		100
**Villages Un-served even by CHW		-

* Percent to total Villages without Health Centre i.e. 4 ** Percent to all Villages i.e. 16

MIZORAM
SERCHHIP R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991

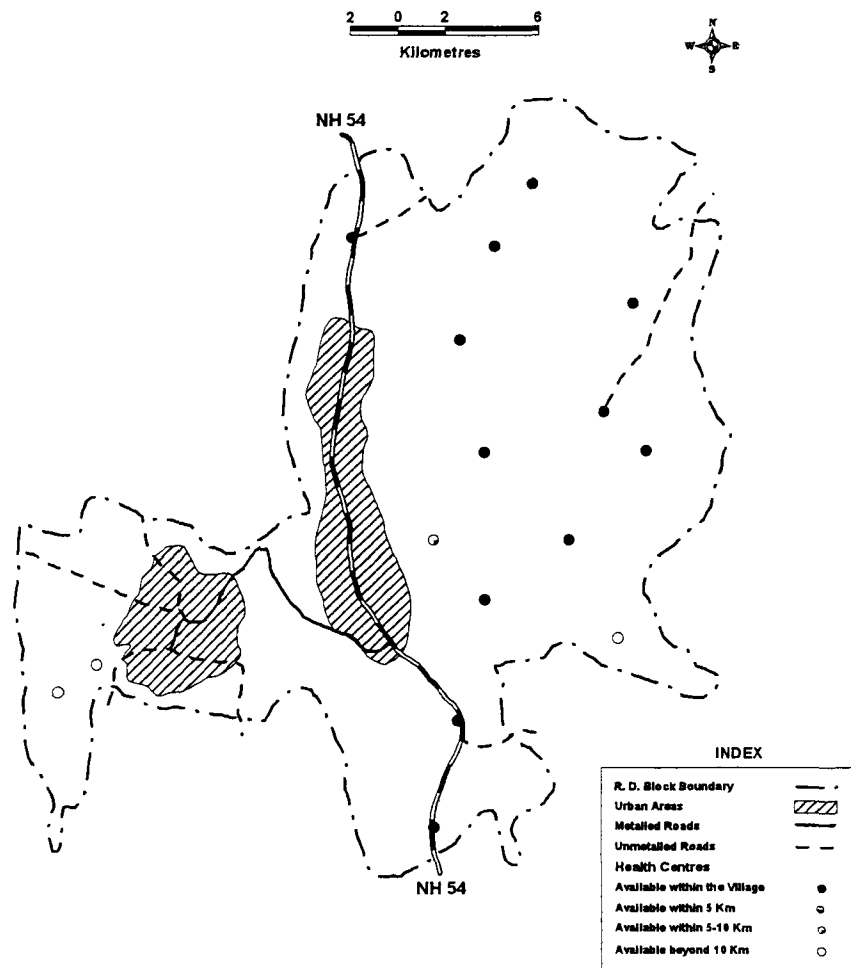


Fig. 3.19

MIZORAM
LUNGLEI R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991

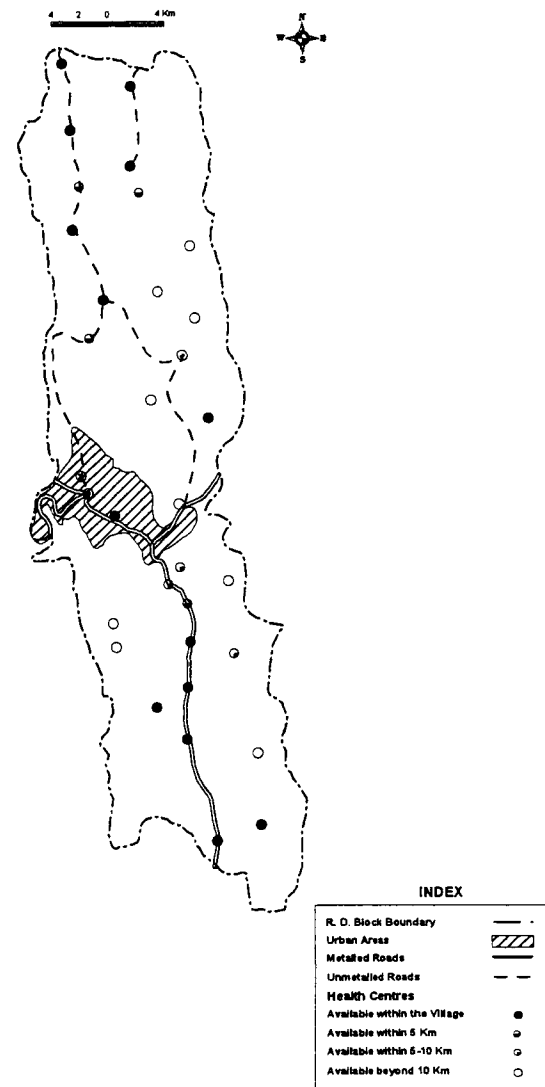


Fig. 3.20

The chosen criteria for scrutinizing health provision at the block level suggested that Serchhip Block is one of the best served as far as the health provision in the block in terms of doctor-population ratio, bed-population ratio etc are concerned.

The pattern already observed at the block level is further strengthened by village level data. It is apparent from table.3.19 that in this block relatively high proportion villages 75 percent have health centre. The remaining 25 percent are served by CHW and hence, no villages in this block lie outside the reach of CHW.

Lunglei Block

Lunglei town, the headquarters of both Lunglei block and Lunglei district is the second largest urban centre in the state. The block spreads in the southern part of the state, comprising a portion of the ridges and valley region in the west and part of the mountainous region in the east. The geographical extent of this block is about 1117 Sq.Km and the elevation generally ranges from 300m to 1200m from the mean sea-level.

Table 3.20
Lunglei Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	13	43.34
Within 5 Km	4	13.33
5 – 10 Km	3	10
Beyond 10 Km	10	33.33
Total	30	100
*Villages without Health Centre but served by CHW		94.12
**Villages Un-served even by CHW		03.33

* Percent to total Villages without Health Centre i.e. 17 ** Percent to all Villages i.e. 30

The inter-block health facility differential has put the block among one of the most favourable situation, both in terms of its doctor-population ratio and bed-population ratio. Villages with health centre accounts for nearly half the village of this

block where as the remaining half has no health centre but located within 5 Km or within 5-10 Km or beyond 10 Km from the nearest health centre (Table 3.20). Villages located beyond 10 kilometres form the highest proportion and are mainly located in the northern most or southern most part of the block. The NH-54 passes through the southern half of the block. In general, it may be said that villages in the south are better served when compared to the villages of the northern part due largely to the better communication system (Fig. 3.20). In all, the proportion of villages not covered by the CHW seems very insignificant.

Lungsen Block

This block contains one urban centre namely, Tlabung, which serves as a gate way or transit point for Indo-Bangladesh border trade in the state, where the magnitude of trading activities as of now is fairly small. The relief of this block ranges from 300 to 800m in some parts, embracing land area of about 1046 Sq.Km.

Table 3.21
Lungsen Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	12	19.67
Within 5 Km	19	31.15
5 – 10 Km	9	14.75
Beyond 10 Km	21	34.43
Total	61	100
*Villages without Health Centre but served by CHW		57.14
**Villages Un-served even by CHW		34.43

* Percent to total Villages without Health Centre i.e. 49

** Percent to all Villages i.e. 61

It has been noted earlier that the doctor population ratio variable has placed Lungsen block among the most deprived category. However, the doctor population ratio

seems to have been more favourable for this block largely due to the location of hospital attached with specialized services for leprosy patients in Tlabung town.

The above table (table 3.21) further probes the availability and distance aspect of health care provision at the village level, where a relatively low proportion about 20 percent of the villages has health centre of any kind. It may be observed from figure 3.21 that a comparatively fewer number of villages are found to be scattered in isolation throughout this block a high proportion of rural settlements are found to be concentrated in the western part of the block, closely encircling the town Tlabung. As such, the proportion of villages located within 5 kilometres accounts for nearly 20 percent, yet villages located beyond 10 kilometres from the nearest health centre shared a significantly high proportion i.e about one-third villages in the block. This situation is further worsened by the fact that about one-third villages in this block lies outside the reach of CHWs.

3.5.4 Blocks in the Medium Altitudinal Zone entirely Rural

Aibawk Block

Located in the interior area of the state, Aibawk block covers a geographical area of about 616.88 Sq.Km. The general elevation ranges from 600m – 900m and the distributional patterns of rural settlements in this block follows the alignment of the main ridge. Nearly all the villages are located along the central ridge spreading in north to south direction without much dispersion elsewhere.

A cursory glance at figure 3.22, one observes all the 23 villages in this block except only one in the south east are connected by motor-able roads. The spatial

MIZORAM
LUNGSEN R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991

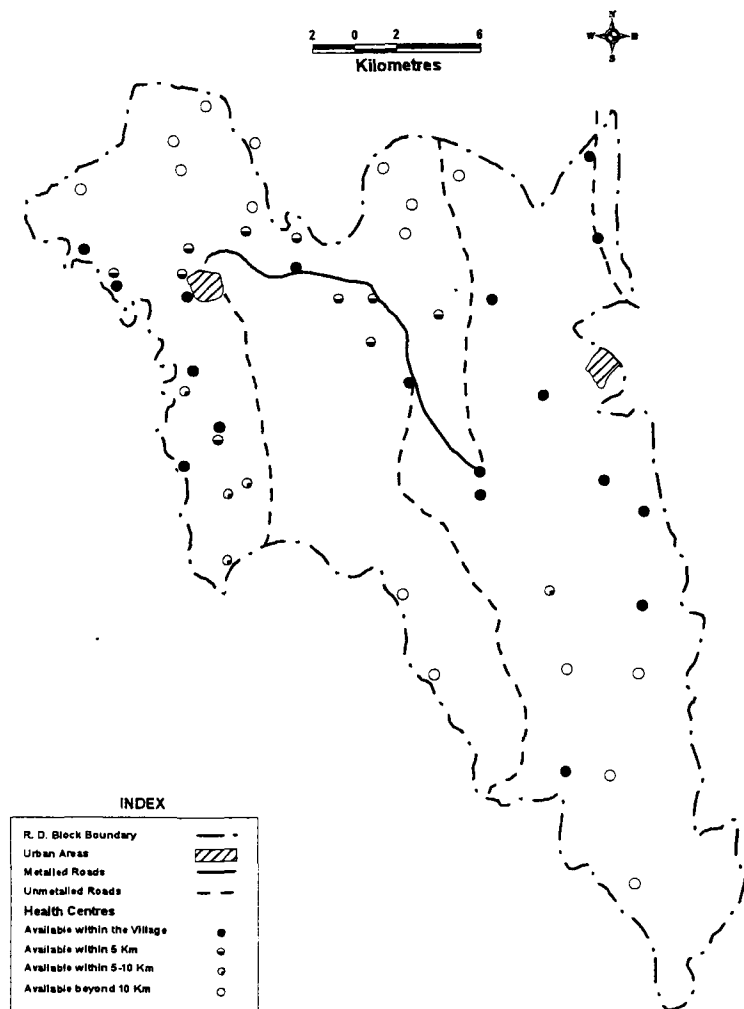


Fig. 3.21

MIZORAM
AIBAWK R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991

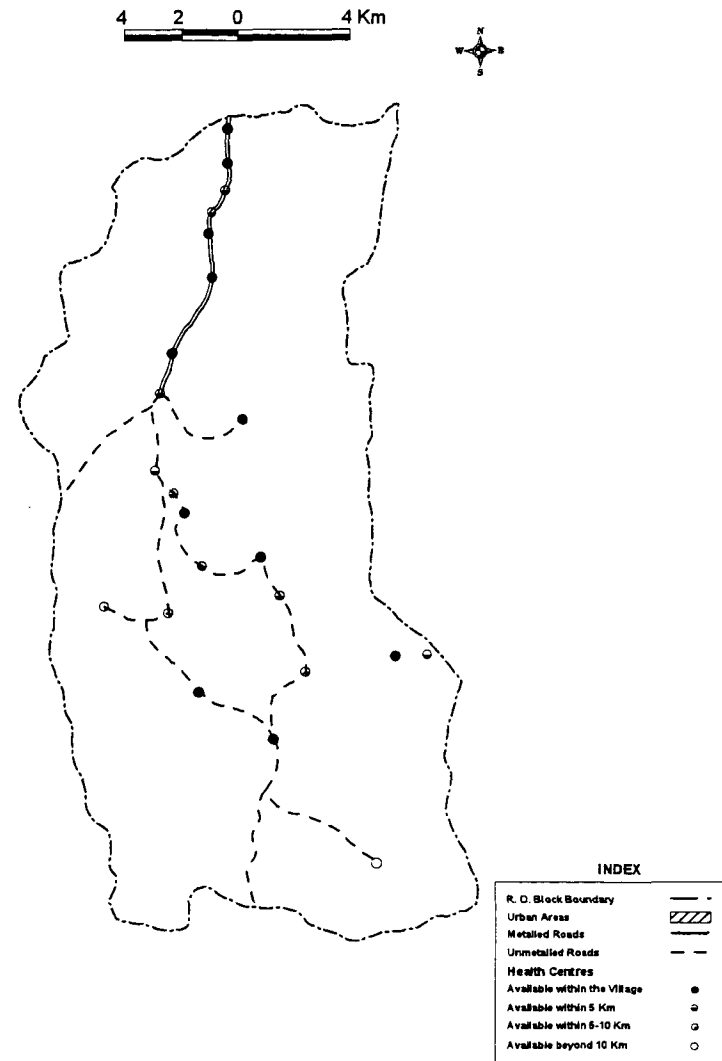


Fig. 3.22

patterning of health centres in this block reflects that health centres by and large are located rationally as villages having health centre are generally interspersed by villages without health centre simultaneously in that order.

Table 3.22
Aibawk Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	11	47.83
Within 5 Km	8	34.78
5 – 10 Km	3	13.04
Beyond 10 Km	1	04.35
Total	23	100
*Villages without Health Centre but served by CHW		75.00
**Villages Un-served even by CHW		13.04

* Percent to total Villages without Health Centre i.e. 12 ** Percent to all Villages i.e. 23

Out of the 23 villages, residents of only one village need to travel more than ten Kilometres to reach the nearest health centre (Table 3.22). The proportion of villages which lie within 5 kilometres from health centre is very high. However, about 13 percent of the villages which has no health centre remain lies outside the purview of a CHW.

Lawngtlai Block

Lawngtlai block lies in the southern extreme part of the state being sandwiched by the most deprived block Chawngte in the west and Tuipang block in the east. The land surface coverage accounted for nearly 1305 Sq.Km. The general elevation of various places in this block ranges from 400m-900m above sea-level.

In the earlier discussion, alongside Chawngte block Lawngtlai block has been roughly established as the most deprived block of the state in so far as the pattern of available health care facility is concerned.

Table 3.23

Lawngtlai Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	13	21.67
Within 5 Km.	7	11.67
5 – 10 Km	10	16.66
Beyond 10 Km	30	50.00
Total	60	100
*Villages without Health Centre but served by CHW		61.70
**Villages Un-served even by CHW		28.33

* Percent to total Villages without Health Centre i.e. 47 ** Percent to all Villages i.e. 60

Table 3.23 illustrates how villages are differentiated by distance variable concerning the relative accessibility of the existing health institution in the block. Villages which have health centre forms a meager proportion of nearly 22 percent. As evident by the above table, the number of villages progressively increase with the increase in the broad distances from the health centres, as such half the villages in this block lies beyond 10 Km from the nearest health centre. Besides, a significant proportion, about 28 percent of the villages in this block are left outside the care of CHWs to fend for themselves. The utilization of services in the health centres seem to have been seriously hampered by the highly dissected terrain conditions and absence of proper road and communication network (Fig. 3.23).

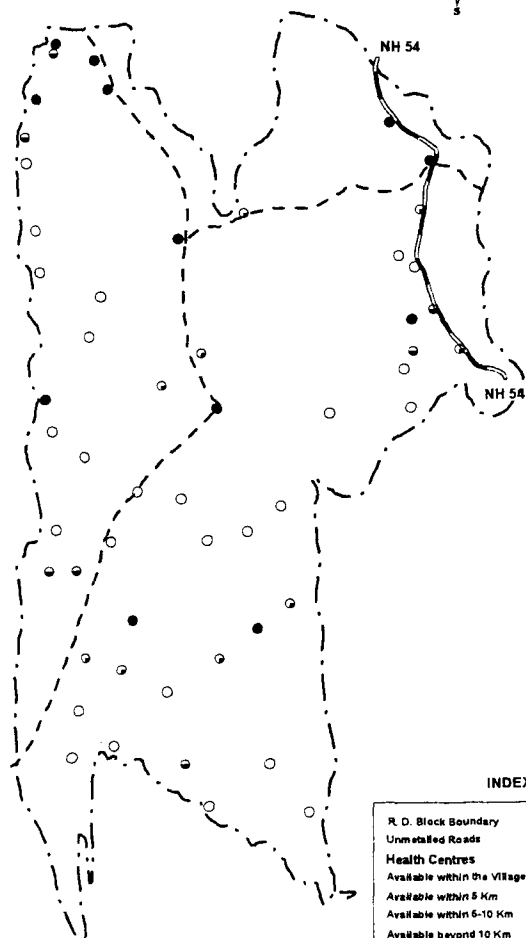
3.5.5 Blocks in Low Altitudinal Zone with Urban Centre

North Thingdawl Block

North Thingdawl block situated in the extreme north of the state shares a common boundary with Cachar district of Assam in the north. Encompassing surface area of 1472.12 Sq.Km, this block is the second largest R.D Block in the state. The general elevation progressively increases from north to south and ranges from 40 m to

MIZORAM
LAWNGTLAI R. D. BLOCK
LOCATION OF HEALTH CENTERS, 1991

2 0 2 6
Kilometres

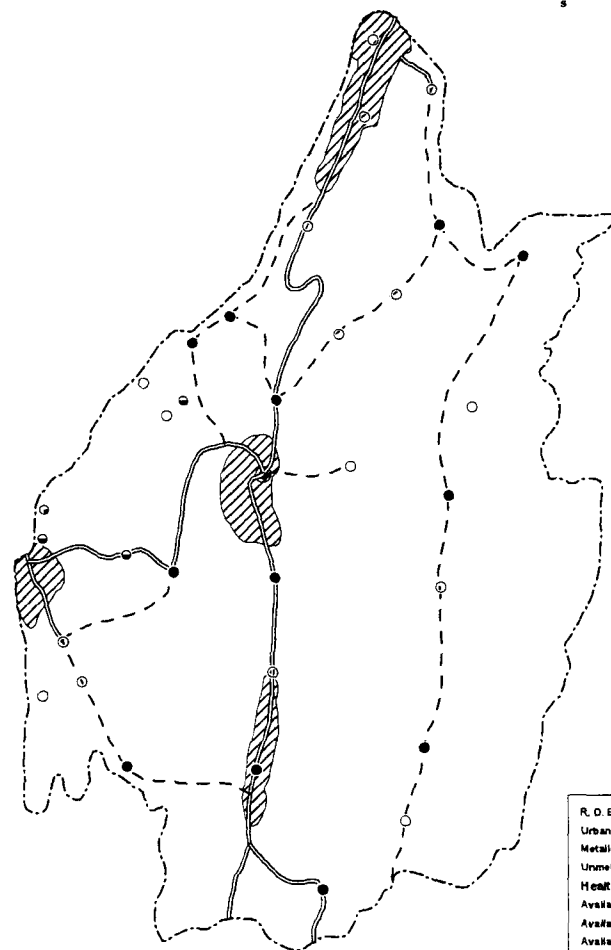


INDEX

R. D. Block Boundary	---
Unmetalled Roads	---
Health Centres	
Available within the Village	●
Available within 5 Km	◐
Available within 5-10 Km	◑
Available beyond 10 Km	○

MIZORAM
NORTH THINGDAWLD R. D. BLOCK
LOCATION OF HEALTH CENTERS, 1991

4 2 0 4 Km



INDEX

R. D. Block Boundary	---
Urban Areas	///
Metalled Roads	---
Unmetalled Roads	---
Health Centres	
Available within the Village	●
Available within 5 Km	◐
Available within 5-10 Km	◑
Available beyond 10 Km	○

Fig. 3.23

Fig. 3.24

700 m. The National High Way-54 (henceforth NH- 54) from north to south traverses the middle of this block.

It may be observed from figure 3.24 that majority villages in this block are uniformly dispersed with an intervening space of about 5 to 10 kilometres across the block. It is also evident that nearly all the villages are connected by jeep-able road.

Table 3.24
N.Thingdawl Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	11	35.48
Within 5 Km	3	9.68
5 – 10 Km	3	9.68
Beyond 10 Km	14	45.16
Total	31	100
*Villages without Health Centre but served by CHW		60.00
**Villages Un-served even by CHW		22.58

* Percent to total Villages without Health Centre i.e. 20 ** Percent to all Villages i.e. 31

The previous analysis of health care provision at block level in this chapter has put the whole block around medium level of well served area out of the total 31 villages more than one third has a health centre each. The proportion of villages located beyond a distance of 10 kilometres is very high and accounts for about 45 percent whereas more than half of the villages which have no health centre are covered by CHW, the proportion of villages lying outside the jurisdiction of even a CHW is a little higher than 22 percent of the total villages (Table 3.24).

Zawlnuam Block

The block is located in the North-western most part of the state, in a comparatively low altitudinal zone, 300 to 600 metres and covers a total geographical area of about 1089 Sq.Km.

The analysis of available health care indicators such as, doctor-population ratio, population bed ratio, share of health institution etc, earlier in this chapter, has placed Zawlnuam blocks in the medium category level to begin with. Close scrutiny of the variable, viz, distance of the health centres may further reveal the actual relative accessibility of health centres for villages of this block (see Fig.3.25).

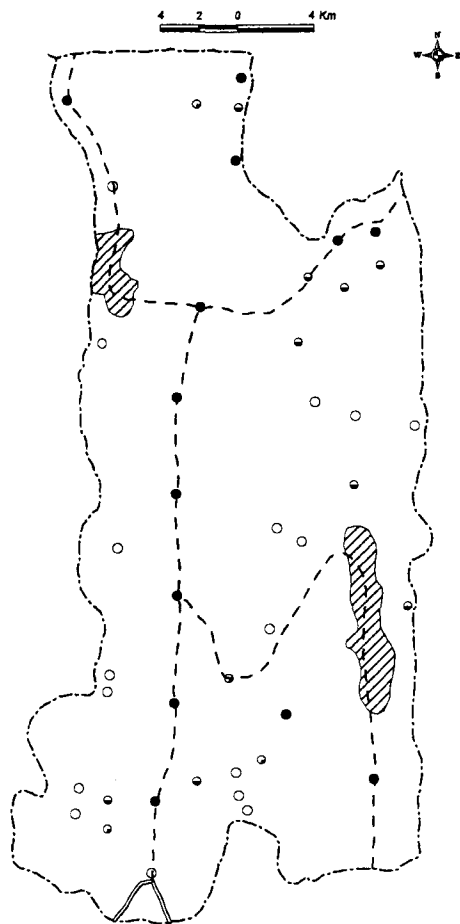
Table 3.25
Zawlnuam Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	14	31.11
Within 5 Km	10	22.22
5 – 10 Km	4	8.89
Beyond 10 Km	17	37.78
Total	45	100
*Villages without Health Centre but served by CHW		74.19
** Villages Un-served even by CHW		17.78

* Percent to total Villages without Health Centre i.e. 31 ** Percent to all Villages i.e. 45

As per the 1991 Census; there are as many as 45 inhabited villages in this block (table 3.25). The proportion of the villages which has direct access to health centre, such as PHC/SHC, Sub Centre within the village is about 31 percent. Much to the dismay of a close observer, more than two-third villages in this block have no health centre. Table 3.25 depicts that the distance of the nearest health centre for 10 villages is 5 km. Delivery of health care services for more than one-third villages in this block is strongly impeded by distance factor as they all lie beyond 10 kilometers. However, out of the 31 villages without health centre, a little more than 74 percent are otherwise covered by a Community health Worker each. Significant proportion villages almost 18 percent in this block remain lie outside the jurisdiction of even a CHW. Conversely, one of the biggest villages, Kawrthah has both Sub Centre and PHC within its area.

MIZORAM
ZAWLNUAM R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991

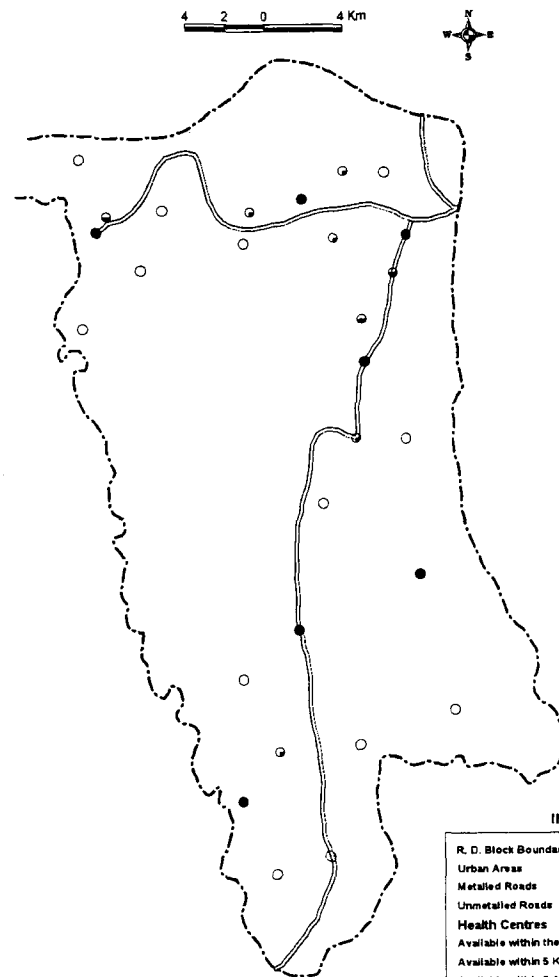


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R. D. Block Boundary	- - -
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Health Centres	
Available within the Village	●
Available within 5 Km	○
Available within 5-10 Km	○
Available beyond 10 Km	○

Fig. 3.25

MIZORAM
WEST PHAILENG R. D. BLOCK
LOCATION OF HEALTH CENTRES, 1991



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Available within the Village	●
Available within 5 Km	○
Available within 5-10 Km	○
Available beyond 10 Km	○

Fig. 3.26

3.5.6 Blocks in Low Altitudinal Zone entirely Rural

The north western and the western most part of the state characterizes by ridges and valley topography may be classified under low altitudinal zone of the state

W. Phaileng Block

It has been observed in the previous analysis that W. Phaileng Block remains in the medium to low disparity list when measured by all standards of health facility indicators. The block lies in the North-western part of the state bordering Bangladesh with a total geographical extent of 999.57 Sq.Km. The general elevations of places in this block range from 300-900 metres from sea level.

Table 3.26
W.Phaileng Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	8	27.59
Within 5 Km	3	10.34
5 – 10 Km	5	17.24
Beyond 10 Km	13	44.83
Total	29	100
*Villages without Health Centre but served by CHW		76.19
**Villages Un-served even by CHW		17.24

* Percent to total Villages without Health Centre i.e.21 ** Percent to all Villages i.e. 29

In 1991, there were as many as 29 inhabited villages across this block. However, health centres are to be found only in about one fourth of the villages (Table 3.26). For a large majority village geographical distance seems to pose serious obstruction to delivery of health services from health centres as the nearest for them is located beyond 10 Km (Fig.3.26) that too in a hilly terrain. However, a significant proportion of the villages that have no health centre are served by CHWs.

West Bughmun Block

West Bughmun block is one of the five blocks in the state which form the western frontier adjacent to Bangladesh. A high majority of the block falls within the relief region 300-900 m, covering surface area of about 1389 Sq.Km. The population of the block is entirely of rural in its composition

As has been noted earlier in this chapter the doctor population ratio and bed-population ration computed for the block has put this block in the high disparity category. Close scrutiny of health care differential with reference to distance of villages from the nearest health centre level may further strengthen this apparent depravity.

Table 3.27

W.Bughmun Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	14	31.82
Within 5 Km	5	11.36
5 – 10 Km	4	09.09
Beyond 10 Km	21	47.73
Total	44	100
*Villages without Health Centre but served by CHW		70
**Villages Un-served even by CHW		20.45

* Percent to total Villages without Health Centre i.e. 30 ** Percent to all Villages i.e. 44

Table 3.27 differentiates villages in this block by their relative distance from the nearest health centre. Nearly one third of the villages in this block have at least a health centre in the village. However, delivery of services from such health centres pose serious problem for nearly half the villages which are dispersed elsewhere in this block (Fig. 3.27). Distance and terrain conditions alone seem to impose severe restriction, not withstanding the meager quality of services available, to those villages located more

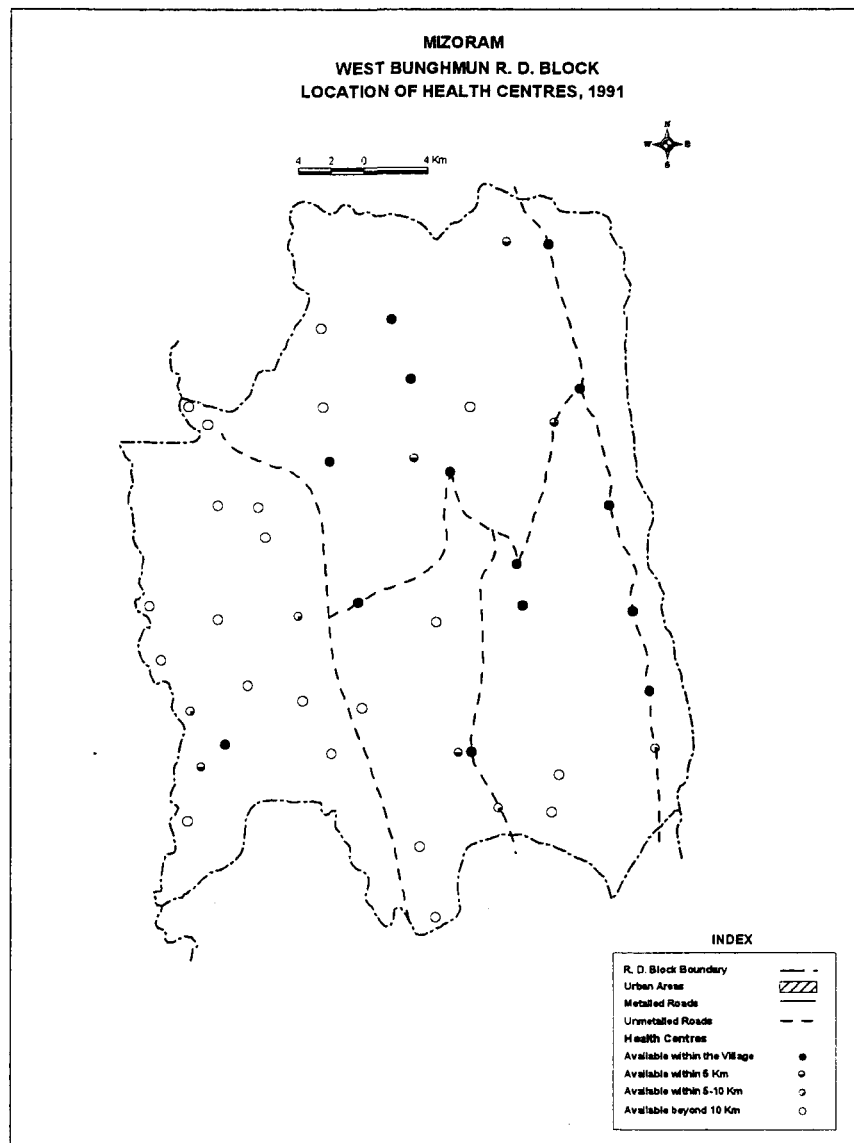


Fig. 3.27

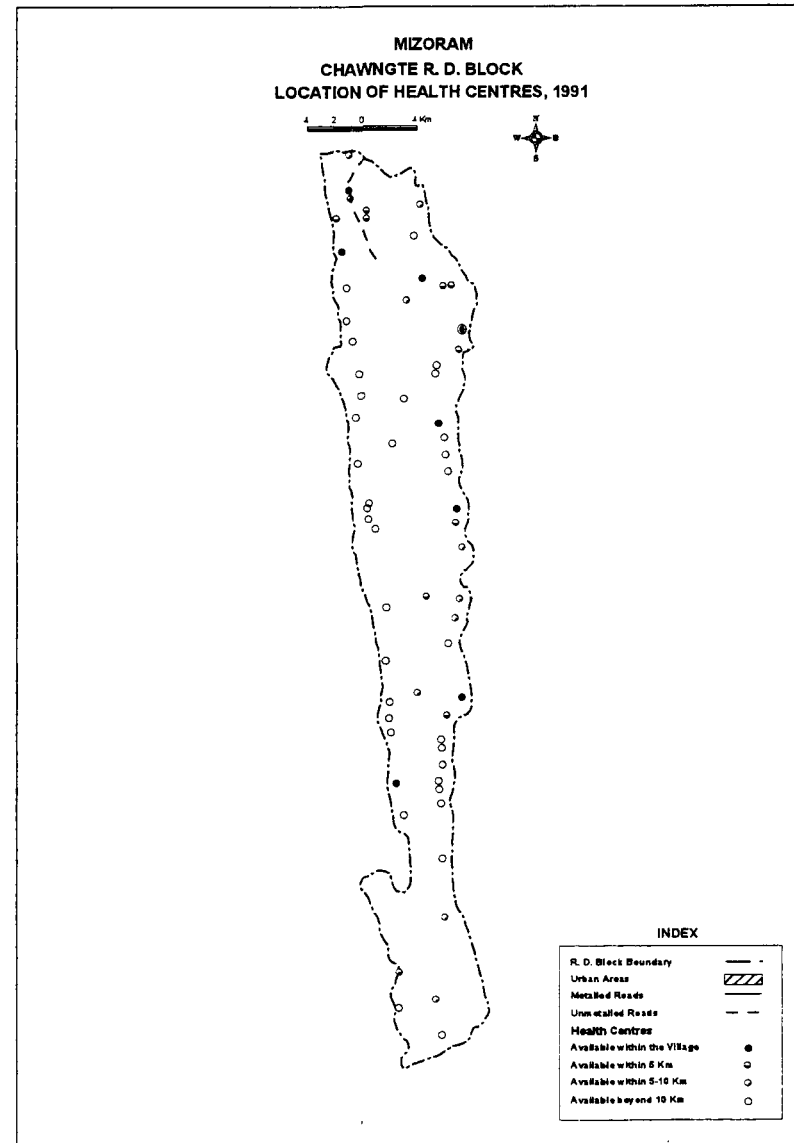


Fig. 3.28

than 10 Km away from such health centres. In addition, significantly large proportion about 20 percent villages in this block is left even outside the care of CHWs.

Chawngte Block

Located in the extreme South-western part of the state, this elongated block runs along the Indo-Bangladesh border in a relatively low altitudinal zone of the state. The general elevation ranges from below 200m-600m and the entire geographical area of the block is roughly 686 Sq.Km.

Chawngte block appears to be one of the most deprived blocks in the state when measured by any standard of health care facility indicators. This deprivation got further accentuated when the data is scrutinized at village level (table 3.28)

Table 3.28
Chawngte Block: Distribution of Villages by Distance from the Nearest Health Centre 1991

Distance (Broad Range)	No. of Villages	% of Villages
Within the Village	8	11.27
Within 5 Km	13	18.31
5 – 10 Km	16	22.54
Beyond 10 Km	34	47.89
Total	71	100
*Villages without Health Centre but served by CHW		33.33
**Villages Un-served even by CHW		59.15

* Percent to total Villages without Health Centre i.e. 63 ** Percent to all Villages i.e. 71

Out of the 71 villages located in the entire block a relatively low proportion, only about 11 percent have health centre of some kind. Besides, group of villages that are left even outside the purview of CHWs is as high as 59.15 percent, that too a large majority proportion about 47.89 percent are located beyond 10 Kilometres away from the nearest health centre. As far as the availability and accessibility aspect of health care facility is

concerned, none other than villages in this block should therefore be conceded as the most deprived in the entire state (Fig.3.28).

3:6 Concluding Statement

The analysis of available health care delivery system in Mizoram at the different levels of spatial aggregation leads to the following broad generalizations.

Firstly, the inter-district variation in the availability of health care facility in the state is found to be minimal. The districts which are better off in quantitative terms of available health care facility are not necessarily the district that are better served, when actual delivery potential is measured by health facility and population ratio.

Secondly, urbanization seems to be associated with better availability of health care provision both at the district and block level. However, a close scrutiny at the village level data shows that many villages located near large urban centres are usually left un-served as far as the general absence of medical amenity within the village is concerned. This is one indication that urban centres are well endowed with health institution at the expense of the nearby rural settlements. Thirdly, inter-block variation in health care facility reveals the highest disparity in terms of health care provision is recorded either by the blocks that are peripheral in their location or the blocks which contain entirely of rural population with the exception of very few blocks.

Fourthly, the blocks lying in the eastern higher altitudinal zones of the state generally exhibit higher proportion of their villages served by health facilities. The lowest proportion of villages served by medical facilities is found to be located mainly in the western and southern most part of the state.

Fifthly, while urban centres are relatively well served, many of the nearby villages are left un-served even by Community Health Worker. It is not clear if such a situation is indeed a policy implication that villages close to urban centres need not be provided with better health care facility as people can avail the facility located in the nearby urban area.

Lastly, there are glaring instances of inequalities in the geographical patterning of the location of health centres at the villages of the blocks. It has been found that while a group of clustered villages do not have even a health centre, villages of the same size close to each other are found each having a health centre. Constraints associated with distance from the nearest health centres are relatively higher for those villages located in the western part of the state close to Bangladesh border than rest of the villages located elsewhere in the state.

Comparison of villages of the various developmental block located in different altitudinal zones of the state also revealed certain interesting patterns, that villages of the blocks that are located in the eastern higher altitudinal zone of the mountainous region of the state and those located in the middle section of the parallel ridges are comparatively better served when compared to villages of those blocks that are located in the low altitudinal zone of the western most part of the ridge and valley region, in so far as the accessibility and availability of health care facility is concerned. It may also be noted that quite a few blocks exhibits a deviation from this general pattern.

Blocks that contain urban centres do not necessarily record better served situation as far as the accessibility by geographical distance and availability of health

care facility at village level is concerned, for instance, among the blocks that are located in the high altitudinal zone of the east, the two blocks that contained entirely of rural population, namely Ngopa (part of the undivided Aizawl district now formed part of the newly created Champhai district) and Sangau (Saiha district, formerly part of the erstwhile Chhimtuipui district), both excelled their counterparts blocks that contain urban centres, when the proportion of villages having health centres and the aspect of accessibility represented by distance variable is taken into consideration.

However, among those villages located in a comparatively low altitudinal zone of the state, the block that contain urban centres registered a situation better than those blocks containing population of entirely rural.

It is fairly striking that among those blocks located in part of the middle ridges, the most urbanized blocks Tlangnuam and Lunglei do not record any better situation than the blocks that contain population entirely of rural like Aibawk block (Part of Aizawl district) located very close to Tlangnuam block. Further, it may also be noticed among those blocks located in the middle ridges, Tlangnuam block which contains the most urbanized settlement in the state, namely, Aizawl records the largest proportion of villages lying beyond 10 Kilometres from the nearest health centres.

CHAPTER – IV

PREVALENT DISEASES IN MIZORAM

4.1 Introductory Statement

Diseases tend to manifest unevenly over space. An understanding of diseases and health problem is the basis of all health care. A fuller understanding of health demands that humanity be seen as part of an ecosystem. The human ecosystem includes all the dimensions of the man-made environment. The greatest improvement in human health thus may be expected from an understanding and modification of the factors that favours disease occurrence in the human eco-system⁸⁰. With this background, the present chapter made an attempt to assess the prevalence of major communicable diseases in Mizoram. Moreover, prevalence as represented by the magnitude of reported cases at the health centres is viewed as a reflection of utilization of the existing health centres too. This is so because a higher prevalence of a particular disease or multiple diseases may be reflection of either inadequate provision of preventive or curative health care facility or a lack of adequate utilization of the existing health care facility.

The analysis of morbidity data for the present work relates to those categories of *Principal Communicable Diseases* classified by the Central Bureau of Health Intelligence (CBHI). Out of the 17 *Communicable Diseases* listed in the report form (see Appendix-VII), statistically important six major communicable diseases are chosen for the present analysis. The CBHI is the Health Intelligence Wing of the Directorate

⁸⁰ K.Park (1997) *op.cit.* p. 17

General of Health Services. At national level, it is the sole organization which deals with the collection, compilation, analysis and dissemination of the information on health conditions in the country covering various aspects of health including health status, health resources, utilization of the health facilities etc. Surveillance on principal Communicable Diseases other than those covered under the International Health Regulations is also being maintained on the basis of the monthly reports received from States/Union territories in the prescribed Performa.

Principal communicable diseases have been purposively chosen for analysis on the ground that these diseases are easily preventable but still constitute one of the major public health problems in developing countries like India. The incidence of communicable diseases therefore is viewed as an important index of the health consciousness level of the concerned population on one hand, and the efficacy of the existing health provision to generate public awareness as well as to curb the outbreak of diseases, on the other.

Apart from those categories of diseases classified as communicable, a section of this chapter has been devoted to *Malaria*, as this disease forms the major health problem of the study area. Though the initial attempt was to examine the efficacy of the existing health provision to curb or contain diseases occurrence spatially and over time, for about five years, records found in the health centres are fragmentary, discontinuous and incomplete to make meaningful dis-aggregation at lower levels and it was not possible to probe the morbidity data spatially for a number of years. As such, except for malaria, district level is taken as the lowest unit for studying spatial patterns of morbidity.

4:2 Principal Communicable Diseases Incidence

Table 4.1 summarizes the selected principal communicable diseases ranked by incidence as represented by reported cases during one year period from April 2002-March 2003⁸¹. The table also presents institutional cases of diseases in actual number, the computed value of incidence per thousand persons for each category of diseases and the abbreviations used for each disease.

Table 4.1
Mizoram: Principal Communicable Diseases Ranked on Incidence Rate (2002- 03)

Rank	Disease	Abbreviation Used	Institutional Cases	Incidence per '000 persons
1.	Acute Respiratory Infection (Including Influenza & excluding Pneu.)	ARI	32899	37.02
2.	Acute Diarrhoeal Diseases (Including Gastro Enteritis & Cholera)	ADD	15216	17.12
3.	Pneumonia	Pneu	4663	5.25
4.	Viral Hepatitis	ViHe	1073	1.21
5.	Pulmonary Tuberculosis	PTB	963	1.08
6.	Enteric Fever	EnFe	278	0.31
	All Others		400005	450.12
	Total		455097	512.17

Source: Compiled from State Epidemiology Cell Record, Directorate of Health Services, Mizoram & Census of India, 2001 figure for Population.

The above table shows that during the period April 2002-2003, Acute Respiratory infection accounts for the highest incidence rate per thousand persons. Acute Diarrhoeal Diseases, the incidence of which is directly related to warm season, poor environmental sanitation and quality of potable water etc. ranks second. The

⁸¹ The reporting Year for Principal Communicable Diseases follows the Financial Year of Indian i.e. April to March. Reporting year for Malaria Control Programme conforms to the Gregorian Calendar Year i.e. January to December. The period 2002-03 has been chosen for the index year, for further analysis because all the districts Chief Medical Offices, including the newly formed 5 districts, were made fully functional in the year proceeding this period, as such morbidity data of each district separately are being maintained by each Office for ready references.

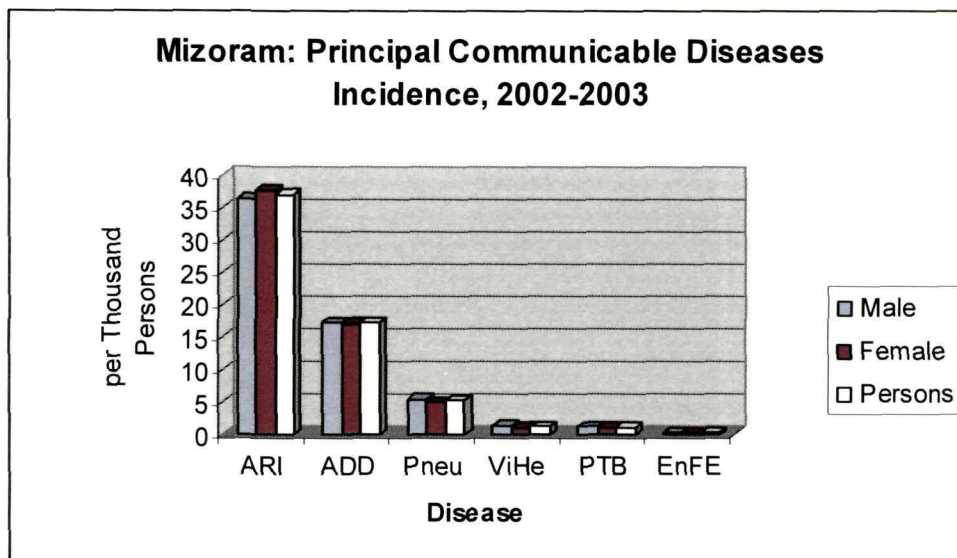


Fig. 4.1

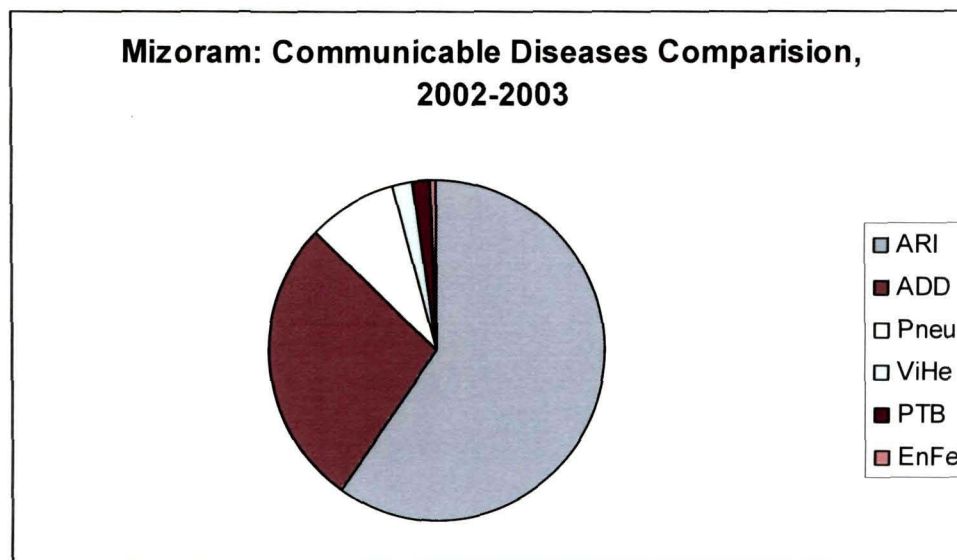


Fig. 4.2

disease which comes next to ARI and ADD is Pneumonia, registering 3.25 persons infected per every thousand persons. About one in every thousand persons suffered from Viral Hepatitis and Pulmonary TB independently (Fig. 4.1). A little less than one in every thousand population acquired Enteric fever during the index year. The incidence of all other diseases apart from the six selected major diseases is as high as 355 persons per every thousand population.

4.2.1 Disease Profile – Temporal Dimension

The proportional share of the selected diseases in Mizoram presents a clear pattern in which ARI dominates the reported cases of principal communicable diseases during the reference period of five years (Table 4.2). Although there has been a marginal decline in the reported cases in the five years period, the relative position of these communicable diseases remain unchanged. Acute diarrhoeal diseases claimed the second highest proportion with a share fairly higher than the remaining groups of communicable diseases such as, Pneumonia, Viral Hepatitis, Pulmonary T.B and Enteric fever. The relative significance of these diseases in terms of percentage share is in that order already cited (see also Fig.4.2)

Table 4.2
Mizoram: Institutional Cases of Diseases in Mizoram in Percentage Share (April to March)

Name of Disease	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
Acute Respiratory	8.61	8.08	7.23	8.75	7.36
Acute Diarrhoeal	3.39	3.89	3.34	3.50	3.41
Pneumonia	0.87	0.89	1.03	0.90	0.85
Viral Hepatitis	0.26	0.33	0.24	0.16	0.15
Pulmonary TB	0.27	0.32	0.21	0.22	0.22
Enteric Fever	0.54	0.12	0.06	0.36	0.99
Others	74.93	86.37	87.89	86.11	87.02
All Diseases	100	100	100	100	100

Source: Computed from State Epidemiology Cell Record, Directorate of Health Services, Mizoram,

One may observe from table 4.2 and figure 4.3 that the share of other diseases not specified increased rather abruptly since 2001- 2002 without any subsequent increase in the next two years. In any case, this connotes the percentage share of communicable diseases to the total diseases has declined significantly since the aforementioned year, indicating that there has been a substantial increase in the incidence of non-communicable diseases such as hypertension, diabetes, cancer, accidents, alcohol and drugs abuse (see Appendix-IX, causes of deaths). One reason for this appears to be changes in lifestyles and growing stress of modern social life. One may hope that the relative dominance of communicable diseases over other diseases will soon assume a continuous declining trend in the next few years switching over to the pattern facing more advanced societies, largely because morbidity seems to have been dominated by diseases other than communicable.

4.2.2 Male - Female Divide

It is important as well as interesting to note that higher incidence of disease per thousand persons is recorded by males when compared with their female counterparts in all category except ARI (Table 4.3).

Table 4.3
Mizoram: Incidence per Thousand Persons (Institutional Cases) April, 2002 – March, 2003

Name of Disease	Male	Female	Persons
Acute Respiratory Infection	36.44	37.65	37.02
Acute Diarrhoeal Diseases	17.16	17.09	17.12
Pneumonia	5.50	4.98	5.25
Viral Hepatitis	1.32	1.09	1.21
Pulmonary TB	1.15	1.01	1.08
Enteric Fever	0.31	0.31	0.31
All Others Diseases	411.65	491.34	450.12
All Reported Diseases	473.61	553.38	512.17

This indicates males are relatively more prone to the attack of communicable diseases when compared to their female counterparts due mainly to males' more frequent outdoor exposure and separate life styles.

However, the incidence of diseases other than principal communicable diseases is much higher for the females than their male counterparts (Figure 4.1)). This is largely due to reproductive problems faced by women in this age group.

The table below (Table 4.4) depicts male and female divide in percent share of each category of the selected diseases. As for ARI the percentage share of males exceeds females in the first two reporting years i.e. 2000-01 & 2001-02. However, the percentage share of females outnumbered that of males for the following consecutive three years (2002-03, 2003-04, 2004-05). The proportion of males is higher than that of females for the diseases classified as ADD, Pneu and PTB in all the five reported years. Enteric Fever however exhibits a rather fluctuating percent share for the two sexes.

Table 4.4
Mizoram: Male-Female Divide in Percent Share of Institutional Cases (April – March)

Disease	2000-2001		2001-2002		2002-2003		2003-2004		2004-2005	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
ARI	50.65	49.35	52.03	47.97	49.45	50.55	49.45	50.55	48.78	51.22
ADD	51.53	48.47	53.37	46.63	51.50	48.40	51.60	48.40	51.76	48.24
Pneu.	51.90	48.10	53.52	46.48	53.07	46.93	53.07	46.93	53.94	46.06
Vi.He	54.60	45.40	53.62	46.38	51.95	48.05	51.95	48.05	52.87	47.13
P TB	56.54	43.46	59.97	40.03	56.37	43.63	56.36	43.63	55.41	44.59
En Fe	41.64	58.36	54.40	45.60	50.00	50.00	54.49	45.51	49.68	50.31
Others	48.77	51.23	49.38	50.61	47.17	52.83	46.43	53.57	47.77	52.23
Total	49.09	50.91	49.85	50.15	47.73	52.26	46.99	53.01	48.06	51.93

Source: Compiled & Computed from State Epidemiology Cell Record, Directorate of Health Services.

It is remarkable, however that the percentage share of females for the diseases other than those classified as principal communicable diseases is comparatively higher than that of males and the gap is increasing over the years (see Table 4.4). The gender

based analysis of the morbidity pattern therefore reveals an important as well as interesting situation that whereas males suffered more from most of the diseases categorized as communicable, females are more prone to diseases and ailments other than those classified as communicable or all other diseases (name of each disease are not specified in the present analysis)

4.3 Efficacy of Health Services

The efficacy of health services is to a very great extent reflected by the health institutions record of deaths per thousand patients in each category of diseases. The divide in percentage share of inpatient-outpatient treatment in each category of disease has also been taken as another index of efficacy as a partial reflection to the quality of care available in the health centres.

4.3.1 Institutional Deaths per Thousand Patients:

As mentioned earlier, reported institutional death per thousand patients is regarded as an important index for assessing the efficacy of the existing health services. Table 4.5 presents the institutional deaths per thousand patients computed for each category of disease, for five consecutive years.

Table 4.5
Mizoram: Institutional Deaths per Thousand Patients (April to March)

Disease	2000-01	2001-02	2002-03	2003-04	2004-05	Average
PTB	66.12	85.63	76.46	54.79	54.20	67.44
ViHe	16.95	46.15	83.97	35.71	8.47	38.25
Pneu	11.60	34.70	30.75	28.20	38.39	28.73
Others	17.38	16.11	15.61	22.15	21.47	18.44
EnFe	8.62	31.25	15.08	16.74	12.90	16.92
ARI	3.46	7.77	14.64	9.46	9.31	8.93
ADD	2.08	3.88	7.68	2.23	2.98	3.77

Source: Computed from State Epidemiology Cell record, Directorate of Health Services, Mizoram.

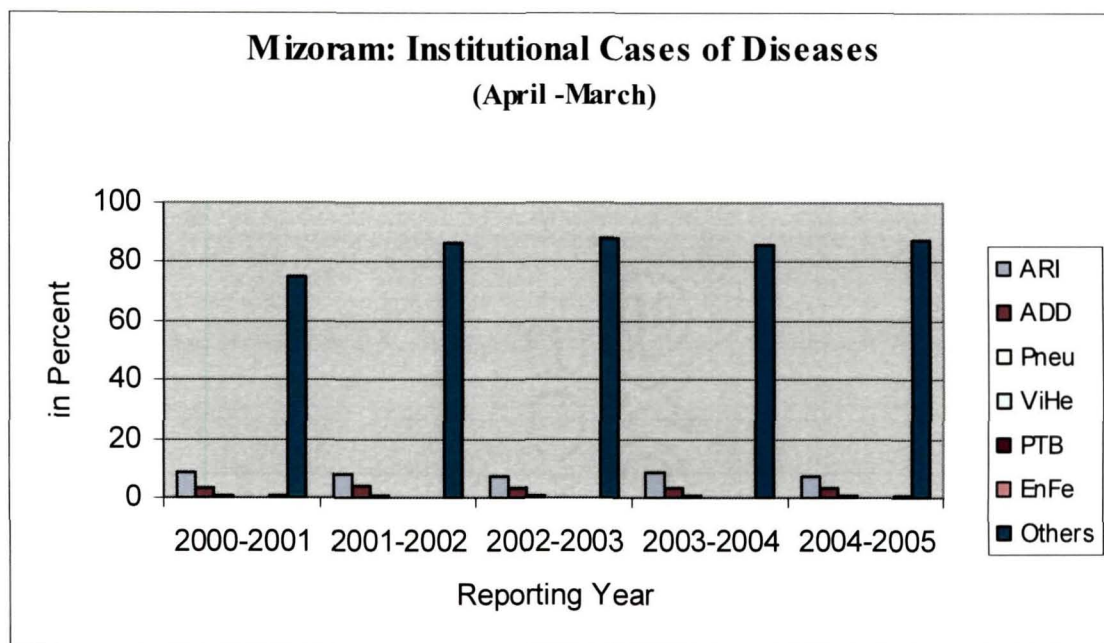


Fig. 4.3

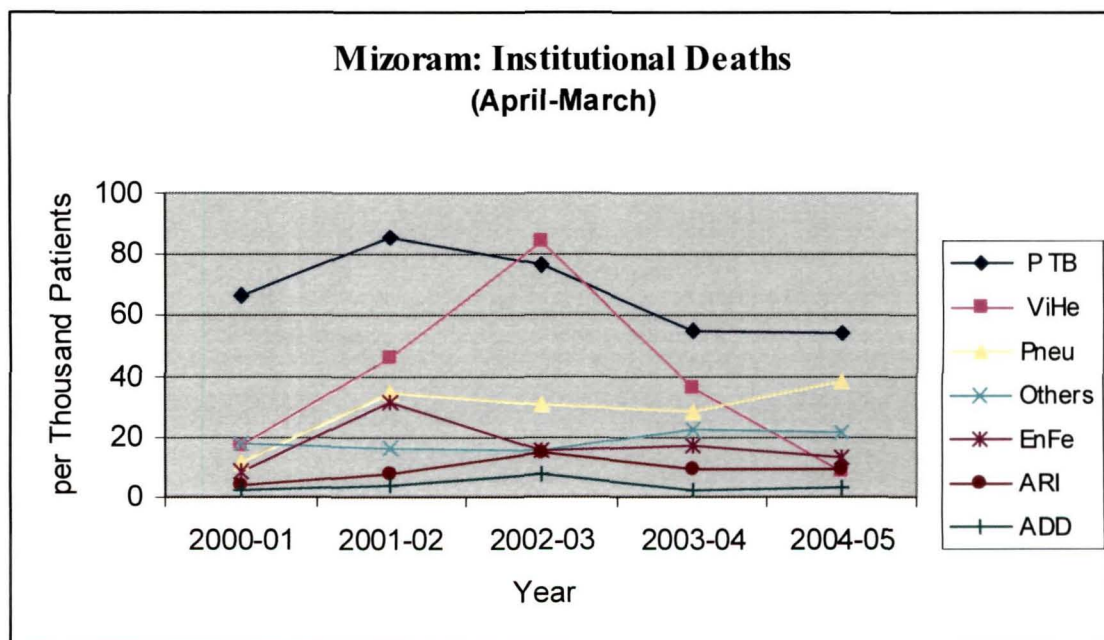


Fig. 4.4

The computed value of annual average institutional deaths per thousand patients reveals, deaths per thousand patients is the highest in the case of Pulmonary TB (Table 4.5). The proportion of deaths per thousand patients is the highest for this disease in all the years excepting the year 2002-03. There seems to be no significant reduction in the amount of deaths per thousand patients over the years.

Viral Hepatitis comes next only to PTD. The year 2002-2003 as a peak period this disease records the largest number of deaths per thousand infected patients. However, the period 2004-2005 shows an abrupt decline in deaths due to ViHe. (Fig. 4.4)

Another disease which records high intensity of deaths per thousand patients is Pneumonia. It is clear from the table that the existing health facility has not made significant stride in reducing deaths due to pneumonia. Even though, early diagnosis and treatment with antibiotics can prevent a large proportion of ARI/pneumonia deaths.

Deaths per thousand patients for all other reported diseases are ranked fourth and it is depressing to note that deaths per thousand patients have been increased in the last two reported years.

Enteric Fever emerged as the fifth ranking disease in terms of death per thousand patients with the average death of 16.92 per thousand patients.

Mortality rates for Acute Respiratory Infection and Acute Diarrhoeal Diseases are much lower when compared to the other categories of diseases. However, it is discernible from the five years record that no significant improvement has been achieved in combating the attack of the two diseases as evident from fluctuating trend in the

reported cases as well as increase in the death rates from affliction of these easily preventable diseases.

4.3.2 In-patient – Out-Patient Divide

Institutional cases of patients whether treated in the health institution as in-patient or merely as out-patient is determined by a number of factors such as the severity of the attack of the disease, the availability and quality of treatment in the health centre, the willingness of the patient to stay in the health centre etc. The proportion of in-patient and outpatient treatment is, therefore, viewed both as a partial reflection of the quality of the available health care services on one hand and the level of health consciousness of the concerned population on the other.

It can be inferred from table 4.6 that a large majority of patients infected with ARI received medical treatment merely as out patient while a very low proportion, 8.97 percent received admission in the health centre as in-patient annually during the reference period of five years.

Table 4.6
Mizoram: In-Patient-Out Patient Divide in Percent Share of Institutional Cases (April–March)

Year	ARI		ADD		Pneu		VI He		PTB		EnFE		Others	
	IPD	OPD	IPD	OPD	IPD	OPD	IPD	OPD	IPD	OPD	IPD	OPD	IPD	OPD
2000-2001	6.36	93.64	23.42	76.58	37.43	62.57	15.82	84.18	20.95	79.05	41.28	58.72	12.30	87.70
2001-2002	12.57	87.42	19.89	80.10	40.14	59.86	16.04	83.96	30.45	69.55	44.44	55.56	14.97	85.03
2002-2003	7.74	92.26	20.78	79.22	37.80	62.20	12.39	87.61	31.59	68.41	41.98	58.02	15.02	84.98
2003-2004	9.79	90.21	23.03	76.97	34.65	65.35	20.26	79.74	37.47	62.53	37.47	62.53	11.99	88.01
2004-2005	8.41	91.59	23.41	76.59	35.81	64.19	15.40	84.60	33.24	66.76	39.19	60.81	10.84	89.16
AVG	8.97	91.02	22.11	77.89	37.17	62.83	15.98	84.02	30.74	69.26	40.87	59.13	13.02	86.98

Source: As in Table 4.5.

AVG = Five Years Average

The above table shows Acute Diarrhoeal Diseases including Gastro enteritis and Cholera exhibits a little higher proportion of inpatient treatment (average 22.11 %) when compared to ARI.

It has been noted earlier that Pneumonia ranked third in terms of institutional death per thousand patients and a little more than one-fourth of the patients (37.17 %) were treated as in-patient in health institutions. The highest proportional share of inpatient treatment for Pneumonia is a direct reflection of the complicatedness of the disease.

Viral Hepatitis, which claimed the life of as many as 38.25 souls per thousand patients annually registered a very low proportion of its patients, treated as in-patient in the health centres. The proportion of inpatient treatment for ViHe is as low as 15.98 per cent annually.

Pulmonary Tuberculosis which records the highest rate of deaths per thousand patients (67.44) has 30.74 % percent of the patients treated in the health institution as in-patient.

Enteric Fever although records a very low rate of deaths per thousand patients, 16.92 annually, but registered the highest percentage share of inpatient treatment (40.07 % annual average).

The inpatient-out patient difference in case of diseases other than those listed above is strongly biased in favour of outpatient. Only 13.02 percent of the reported cases of these diseases were treated as in-patient.

The foregoing analysis of the nature of treatment delivered from the health institutions clearly reveals that, even though the proportion of in-patient treatment in most of the diseases category is low, diseases of complicated nature or life-threatening are likely to record higher percentage of in-patient treatment. Diseases of acute nature and of low risk usually record lower percentage share of in-patient treatment. It is axiomatic that the percentage of patients seeking treatment as in-patient would have been much higher than the present rate, provided, health centres are endow with better infrastructure, medicines and other equipments, particularly of those in rural areas.

4. 4. Urbanization and Literacy as Determinants of Reported Cases of Diseases

Mizoram has the distinction of being one of the few Indian states which experience an extra-ordinarily high level of urbanization and literacy. As per the 2001 Census nearly half the total population is living in urban areas (49.63 Percent) and 88.8 percent of the total population above 6 years is enumerated as literates. At this backdrop, it is pertinent to view the spatial patterns of incidence of diseases in the light of variations in both urbanization and literacy levels over space. This may reflect the impact of urbanization and literacy on the patterns of diseases and utilization of health care facilities at the highly aggregate level i.e. district level.

The coefficient of correlation calculated for Mizoram at the district level indicates a high degree of positive correlation between urbanization and reported cases of diseases (see Table 4.7). Likewise significant positive correlation emerged when we compared literacy rates and reported cases of diseases. Gender gap in literacy further strengthens this situation as reported cases of diseases are inversely related to gender gap

in literacy. The negative correlation between reported cases of diseases and gender gap in literacy is as high as - 0.78.

Table 4.7
Mizoram: Intensity of Reported Cases of Diseases by Urbanization and Literacy

Name of District	All Diseases	Urban Population (in percent)	Literacy Rate	Gender Gap in Literacy rate
Mamit	212.44	16.97	79.10	8.20
Kolasib	778.14	55.34	91.30	2.10
Aizawl	753.90	76.19	96.50	0.50
Champhai	270.20	38.79	91.20	4.00
Serchhip	376.12	48.05	95.10	2.10
Lunglei	485.71	42.24	84.20	6.80
Lawngtlai	145.80	0	70.90	13.10
Saiha	294.42	32.47	86.10	8.00
Correlation with All Diseases		r = 0.88	r = 0.67	= -0.76

Source: As in Table 4.3

It is evident that the spatial incidence of diseases as represented by reported cases are influenced by the level of urbanization and literacy i.e. higher the level of urbanization and literacy rate higher is the intensity of reported cases of diseases. Urbanization and literacy in this context is viewed as a component of overall consciousness for hygienic living or health. While analyzing the spatial patterns in incidence of diseases one should not overlook the influence of urbanization and literacy patterns over space. Urban area as the foci of health services is expected to have higher propensity to report disease occurrence.

4.5 Ranking of the Principal Communicable Diseases

Reported cases of Principal communicable diseases at various districts have been tabulated in order of their relative prevalence as indicated by incidence per thousand persons.

It can be observed from table 4.8 that incidence of ARI is uniformly the highest all over the state irrespective of the differences in altitude and other physiographic or cultural differences as evident from the fact that this disease ranks first among all the districts except Lunglei district.

Incidence of ADD comes second, and is as uniform as ARI barring Lunglei District where ARI is overtaken by ADD. Another respiratory disease, Pneumonia, is ranked third in all districts uniformly. Diseases such as, Viral hepatitis, Enteric Fever, and pulmonary TB occupy either fourth, fifth, and six rank with difference in order of their relative importance across the districts.

Table 4.8
Mizoram: Ranking of Principal Communicable Diseases (2002 – 03)

District	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6
Mamit	ARI (34.69)	ADD (11.40)	Pneu (3.03)	ViHe (0.11)	PTB (0.10)	EnFe (0.05)
Kolasib	ARI 76.80	ADD (21.53)	Pneu (8.84)	PTB (1.56)	ViHe (1.03)	EnFe (0.91)
Aizawl	ARI (56.61)	ADD (20.92)	Pneu (8.49)	ViHe (2.79)	PTB (1.46)	EnFe (0.52)
Champhai	ARI (13.94)	ADD (10.96)	Pneu (0.37)	PTB (0.35)	ViHe (0.14)	EnFe (0)
Serchhip	ARI (25.10)	ADD (16.38)	Pneu (1.30)	PTB (0.17)	ViHe (0.04)	EnFe (0.02)
Lunglei	ADD (22.66)	ARI (19.75)	Pneu (4.21)	EnFe (1.97)	ViHe (0.47)	PTB (0.25)
Lawngtlai	ARI (10.04)	ADD (3.46)	Pneu (2.16)	PTB (0.11)	EnFe (0.11)	ViHe (0.08)
Saiha	ARI (14.82)	ADD (13.66)	Pneu (4.03)	PTB (0.88)	EnFe (0.07)	ViHe (0)
Mizoram	ARI 37.02	ADD (17.12)	Pneu (5.25)	ViHe (1.21)	PTB (1.08)	EnFe (0.31)

Source: As in Table 4.3

4.6 Spatial Patterns of Diseases and Utilization of Health Care Facilities

Close scrutiny of the morbidity data at the district level may provide a better insight into the spatial inequality in the utilization of health care facilities on the one

hand and the spatial variation in the incidence of diseases on the other. The spatial pattern of diseases as represented by reported cases of diseases is indicative of the level of health consciousness of the concerned population and the subsequent willingness of the people to go to health centre to seek medical help. It is possible that actual rate of incidence of diseases may be very high while reported cases in the health centres are few depending on the health consciousness level of the people. As such, morbidity data at the district level have been mapped for the period April 2002- March 2003 for the entire state on the basis of incidence per thousand persons of each category of disease calculated for each district and the percentage share of each category of disease to all the reported cases of diseases as well, to reveal the relative dominance of diseases over space.

Malaria, the major public health problem and great cause of mortality has been mapped for Mizoram for the years 2000 and 2001 from the morbidity data collected at the block level. The mapping has been done in relation to slide positive rate i.e. the percentage of malaria positive out of the total blood slide taken.

4.6.1 All Diseases Incidence by Number of Health Centres

Table 4.9 shows the computed value of institutional cases of all diseases per thousand persons for each district of Mizoram and the number of health centres in each district for the index year 2002-2004. Before coming to the discussion on the spatial patterns of each category of diseases one by one, it may be worthwhile to correlate these two variables so as to get an insight into the utilization pattern of such health care facilities.

Table 4.9
Mizoram: Number of Health Centres by All Diseases Incidence, 2002-03

District	Hospital/CHC/PHC/SHC	Sub-Centres	Total	Incidence per '000 persons
Mamit	8	34	42	212.44
Kolasib	7	28	35	778.14
Aizawl	14	77	91	735.90
Champhai	15	56	71	270.20
Serchhip	7	28	35	376.12
Lunglei	11	69	80	485.12
Lawngtlai	4	26	30	145.80
Saiha	8	33	41	294.42

Source: Health Centres as on 2001, Annual Report 2004-2005, Health and Family Welfare Department, Mizoram & Diseases incidence as in Table 4.7.

It is true that intensity of reported cases depends largely on the health consciousness level of the concern population and the subsequent utilization of the existing health centres. As a result, areas that show higher incidence of a particular disease may not necessarily record comparatively higher intensity in the occurrence of that disease when examined in terms of percentage share of the disease to all reported cases of diseases.

The number of health centres and institutional cases of all diseases per thousand persons for each district has been shown in a bar diagram as figure 4.5 which broadly illustrates the utilization pattern of health care facilities in each district of Mizoram, provided there is no under-reporting or overestimation in the records being maintained at each district health offices. When one correlates the existing health centres and all diseases treated in the health centre one notices Kolasib district closely followed by Aizawl district record the highest level of utilization of health care facilities. Needless to say, the proportion of urban population is the highest in these two districts. Lunglei district ranked third in utilization which is closely followed by Serchhip district. Where

MIZORAM
UTILIZATION OF HEALTH CARE FACILITIES, 2002-2003
DISTRICT-WISE

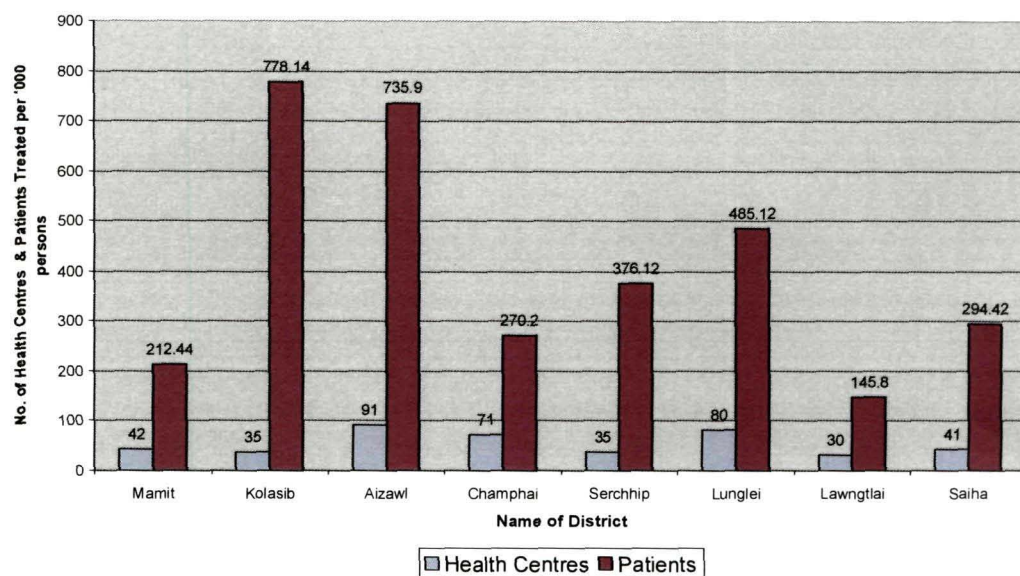


Fig.4.5

Mizoram: Seasonal Pattern of All Diseases, 2002

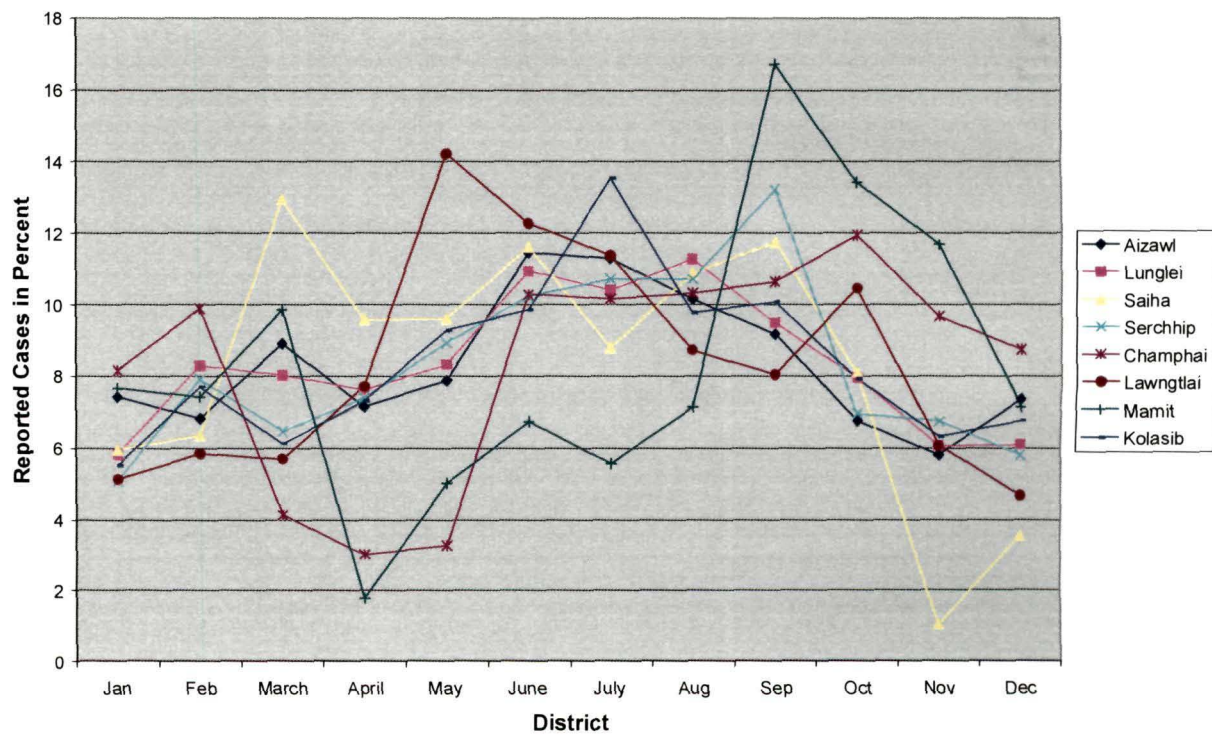


Fig.4.6

as Saiha district and Serchhip district comes next and then followed by Mamit in that order, the figure depicts Lawngtlai district as recording the lowest utilization level of health care facility when measured by reported cases of diseases.

The month-wise differential in reported cases of all diseases in the health institutions of the districts in Mizoram reveals that the peak season for health care utilization or occurrence of diseases broadly corresponds to the monsoon season from June to September (Fig.4.6).

4.6.2 Acute Respiratory Infection

ARI as classified by Central Bureau of Health Investigation includes influenza but excludes Pneumonia in the category. Influenza of 'flu' virus is potentially lethal. In developing countries, an estimated 4.1 million children die from ARI. In India, as in many other countries, ARI is a leading cause of childhood death (Murray and Lopez, 1996). According to the NHFS-2, the percentage of children suffered from an acute respiratory infection (cough accompanied by short, rapid breathing) at some time during the two-week period before the survey varied from 11 percent in Mizoram and 18 percent in Nagaland to 25-29 percent in the remaining states.⁸² In fact, ARI affects young children, adults and the aged

The incidence and percentage of ARI is mapped for Mizoram as figure 4.7 & figure 4.8. ARI appears to be the most prevalent of all the communicable diseases in Mizoram during April 2002- March 2003, in spite of the fact that pneumonia is not

⁸² International Institute for Population Sciences (IIPS) and ORC Macro (2002). *National Family Health Survey (NHFS-2) India. 1998 -99: Northeastern States*. Mumbai, p-173

included in the category. The proportion of ARI to total recorded diseases is 7.36 percent with an incidence rate as high as 37.02 per thousand persons (see Table below).

Table 4.10
Mizoram: Incidence of Acute Respiratory Infection

Name of District	per '000 persons	Percentage to All Diseases
Mamit	34.69	16.33
Kolasib	76.80	9.87
Aizawl	56.61	7.51
Champhai	13.94	5.16
Serchhip	25.10	6.67
Lunglei	19.75	4.07
Lawngtlai	10.04	6.88
Saiha	14.82	5.03
Mizoram	37.02	7.23

Source: As in table 4.3

It is evident from the spatial pattern of ARI that Kolasib district lying in the extreme northern part in a comparatively low altitude zone of Mizoram registered the highest incidence rate of 34.69 per thousand persons. The share of ARI to all recorded diseases in this district is one of the highest when compared to others districts. Aizawl district comes next only to this district with an incidence rate of 56.61 per thousand persons with a percentage share of a little higher than the state average. Serchhip, Lunglei and Mamit districts each records incidence rate lower than the state average. Interestingly, Mamit district (part of former undivided Aizawl district) situated in a relatively low lying belt of Mizoram records the highest incidence rate (34.69) so close to the state average and ARI percentage share to all diseases for this district is the highest in Mizoram. Situated in a high altitudinal zone of Mizoram, Champhai and Saiha districts both record a very low rate of incidence of ARI. ARI incidence rate is the lowest in the district of Lawngtlai district which lies in the extreme southwest corner of

MIZORAM
INCIDENCE OF ACUTE RESPIRATORY INFECTION 92002-2003)

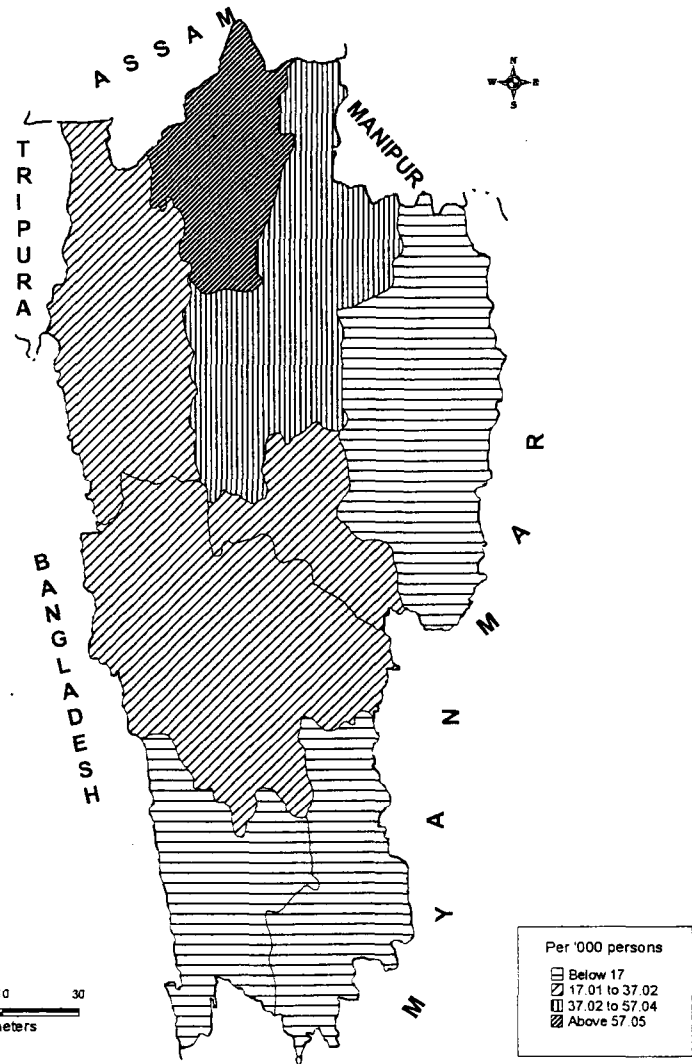


Fig. 4.7

MIZORAM
PERCENTAGE OF ACUTE RESPIRATORY INFECTION
(2002 - 2003)

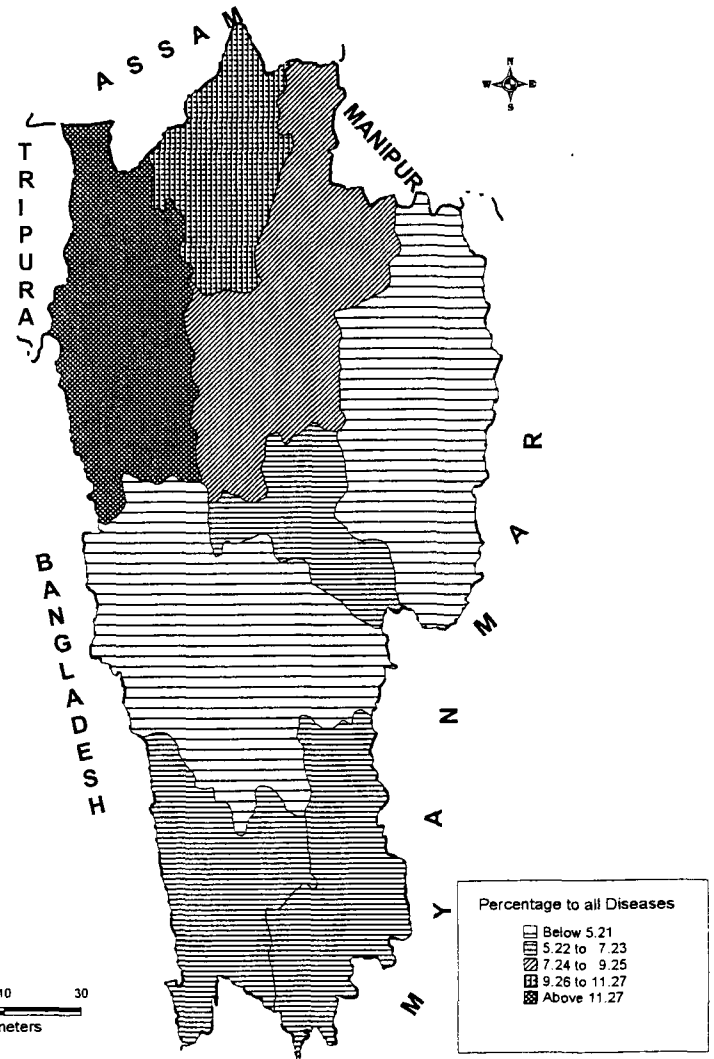


Fig. 4.8

the state. The figures depict that higher ARI incidence rate and higher percentage share to all diseases occur in areas experiencing either higher range of diurnal temperature or higher rainfall, which happens to be the districts lying at lower altitude or in North Western part of the state. It is truly observed that places at higher altitude experience lower diurnal range of temperature, while places at lower altitudes have higher temperature ranges. The North Western portion of the state receives highest rainfall i.e more than 350 cms per annum.⁸³

The monthly variations in the rate of ARI occurrence in the districts are plotted in a line graph to illustrate the seasonality of the disease. It is understood from the Fig.4.11 of ARI that the peak period of ARI roughly corresponds to the monsoon season (June to September). Reported cases also tend rise at the transitional period of the seasons; for instance during March (winter to spring) and September (rainy season to winter).

4.6.3 Acute Diarrhoeal Diseases

Acute diarrhoeal diseases include all Gastro Enteritis cases i.e. cases with three or more loose watery motions in a day, irrespective of etiology/causation.

As per WHO report, at present in the tropical belt 15 - 40 percent of all diseases among children less than five years of age are diarrhoea related. In India at least 115 million children below 5 years die every year owing to acute diarrhoeal diseases. Thus it is major public health problem in all developing countries and distinctly so in India.

⁸³ Rintluanga Pachuau (1994) *op.cit.* p- 42

Diarrhoea is the second most important killer of children under age five worldwide, following acute respiratory infection. Deaths from acute diarrhoea are most often caused by dehydration due to loss of water and electrolytes.⁸⁴

Table 4.11
Mizoram: Incidence of Acute Diarrhoeal Diseases

Name of District	per '000 persons	Percentage to All Diseases
Mamit	11.40	5.37
Kolasib	21.53	2.77
Aizawl	20.92	2.77
Champhai	10.96	4.06
Serchhip	16.38	4.35
Lunglei	22.66	4.66
Lawngtlai	3.46	2.38
Saiha	13.66	4.64
Mizoram	17.12	3.34

Source: As in table 4.6.

The incidence of ADD is much less dramatic than ARI in the State i.e. only 17.12 per thousand persons (table 4.11). It is surprising to note that districts that record higher rate of occurrence include the districts where the level of urbanization is the highest viz, Aizawl, Lunglei, Kolasib all registering above 20 per thousand persons (Fig. 4.9). Districts that record the lowest incidence rate (3.46 per thousand persons) is Lawngtlai district (part of the erstwhile Chhimtuipui district) with a population entirely of rural in composition. Champhai, Serchhip, Mamit, Saiha all fall below the state average incidence rate 17.12 per thousand persons.

The spatial pattern of incidence as represented by the percentage share of ADD to all diseases (Fig.4.10) reveals that Lawngtlai district again exhibits the lowest percentage share of ADD to all diseases. District with higher proportion of urban

⁸⁴ NFHS -2, *op.cit.*p-177

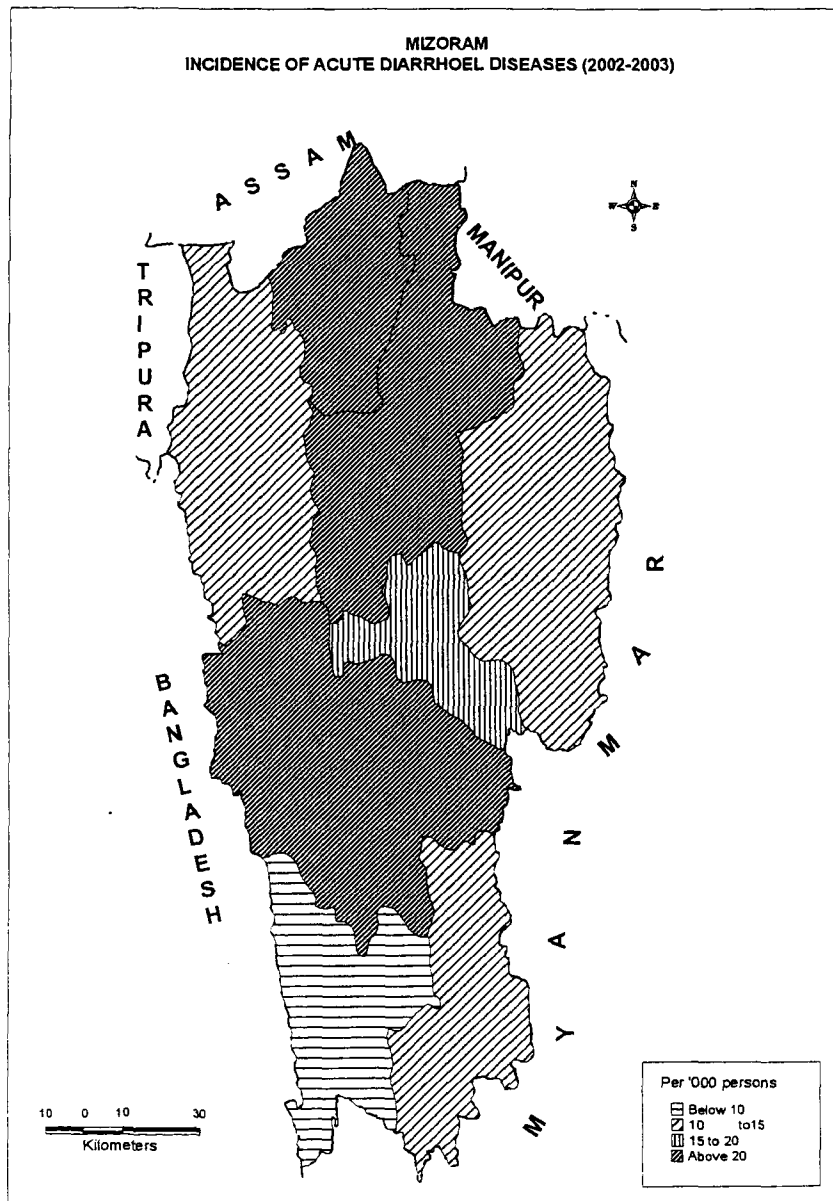


Fig. 4.9

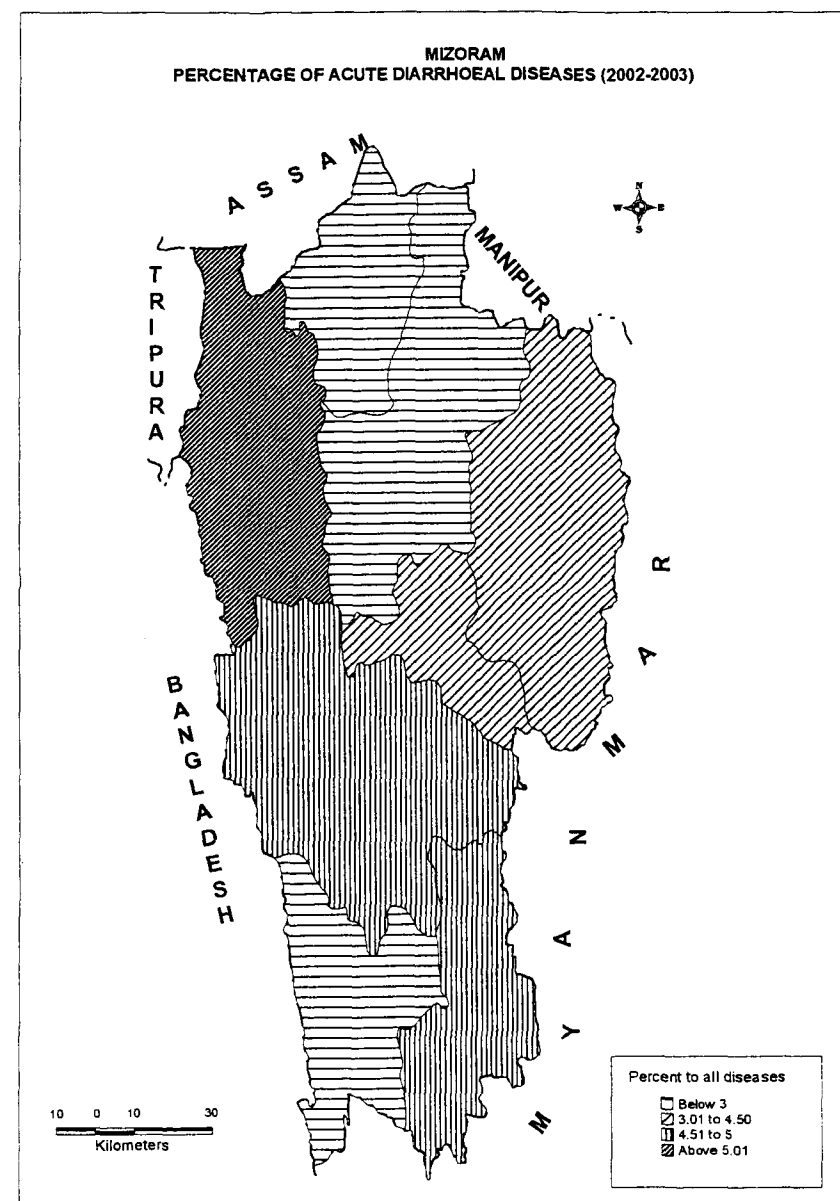


Fig. 4.10

population such as Lunglei, Saiha, Champhai and Serchhip are included among the areas of high incidence. However, Aizawl and Kolasib districts both have recorded ADD percent share lower than the state average (3.34 %).

It is evident from the analysis that higher living standard in urban areas does not necessarily improve the incidence rate of ADD. More crowding, poor sanitation, poor potable water etc in urban environs are reasons generally attributed to the higher incidence of ADD for some of the districts.

It appears that ADD has no pronounced season in Mizoram when the trends of line graph for the various districts are taken in consideration (Fig. 4.11).

4.6.4 *Pneumonia*

Pneumonia is a general term that refers to an infection of the lungs, which can be caused by a variety of micro-organism including viruses, bacteria, and parasites. Often pneumonia begins after an upper respiratory tract infection (an infection of the nose and throat). When this happens, symptoms of pneumonia begin after 2 or 3 days of cold or sore throat.⁸⁵ Pneumonia is mainly a disease of young children and the elderly. It occurs more often during winter and spring than during summer and autumn⁸⁶. An estimated 30% of all Indian child mortality indicates more than 1.4 million child deaths per year caused by pneumonia in India alone (Edmondson and Harris 1992).

Acute respiratory infection, primarily pneumonia, is a major cause of illness among infants and children and the leading cause of childhood mortality throughout the

⁸⁵ Izenberg, Neil: <http://kidshealth.org/parent/infections/lung/pneumonia.html>, Nemours Center for Children's Health Media, Date of download 8/7/05

⁸⁶ Wikipedia, the free encyclopedia on line, *Pneumonia Definition*, Internet, Date of download 8/7/05

Mizoram: Seasonality of Diseases, 2002-2003, District-Wise

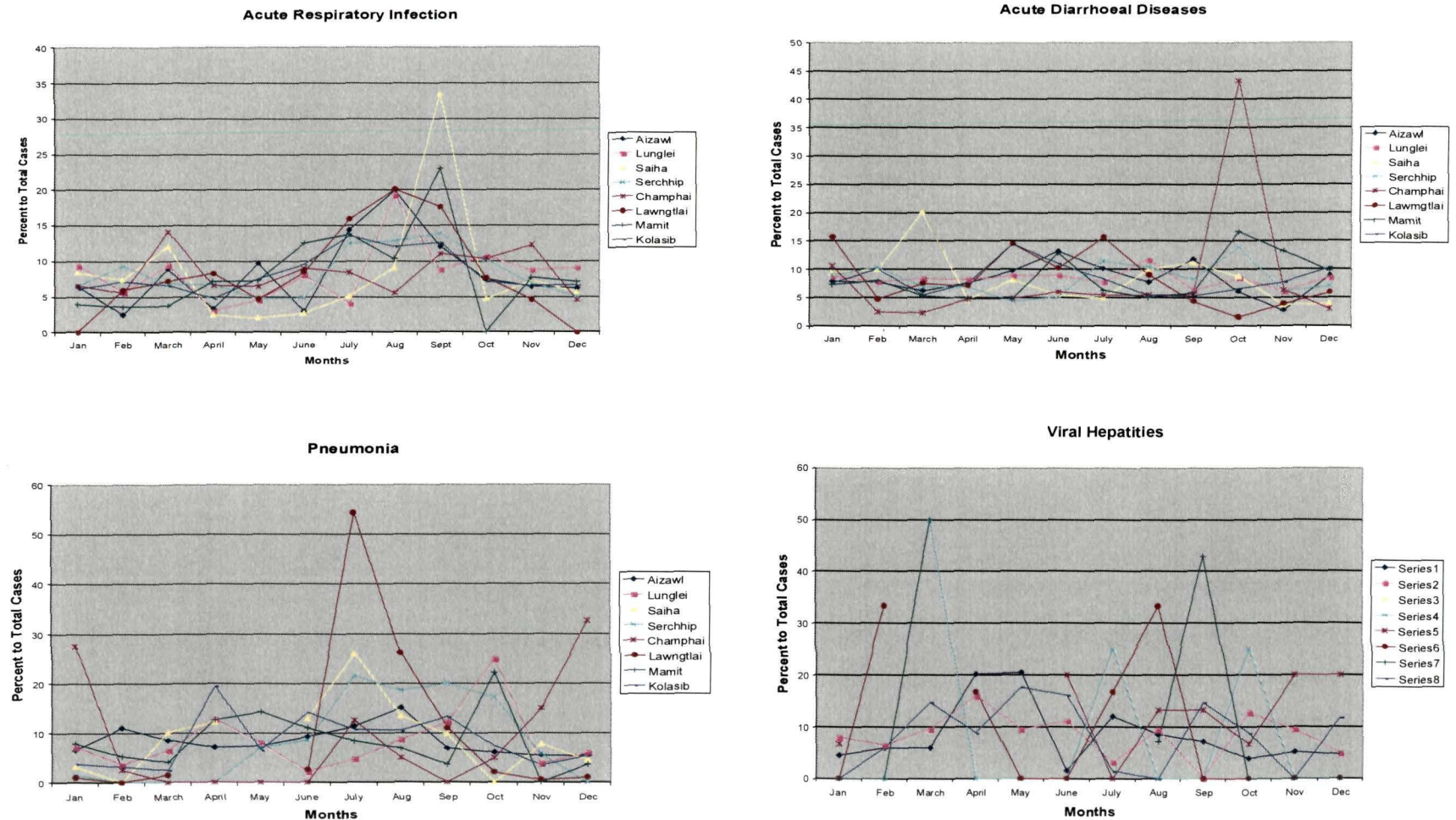


Fig. 4.11

world (Murray and Lopez, 1996).⁸⁷ As per the reporting format of the CBHI, cases of pneumonia are recorded separately and are not included in ARI, hence, discussed as a separate disease in the present work.

Table 4.12
Mizoram: Incidence of Pneumonia

Name of District	per '000 persons	Percentage to All Diseases
Mamit	3.03	1.43
Kolasib	8.84	1.14
Aizawl	8.49	1.13
Champhai	0.37	0.14
Serchhip	1.30	0.35
Lunglei	4.21	0.87
Lawngtlai	2.16	1.79
Saiha	4.03	1.37
Mizoram	5.25	1.03

With an incidence rate of 5.25 per thousand persons and a very low percentage share of 1.03, pneumonia appears to be a disease of low public health problem in Mizoram (table 4.12). In contrast, it is one of the most important diseases that record a very high incidence of deaths per thousand patients (28.73) in this State. In other words, about three out of every hundred pneumonia patients died of the disease during the index year (2002-2003).

The spatial patterns as depicted in figures 4.12 and 4.13 reveal that the two most urbanized districts, Kolasib and Aizawl exhibit the highest incidence rate. Another distinct belt of high incidence, a little below the state average of 5.25 is found comprising Lunglei and Saiha District in the south. Mamit district in the northwest corner and Lawngtlai district in South west corner of Mizoram display low intensity of

⁸⁷ NFHS -2 *ibid.* quoted in the Report.p.171.

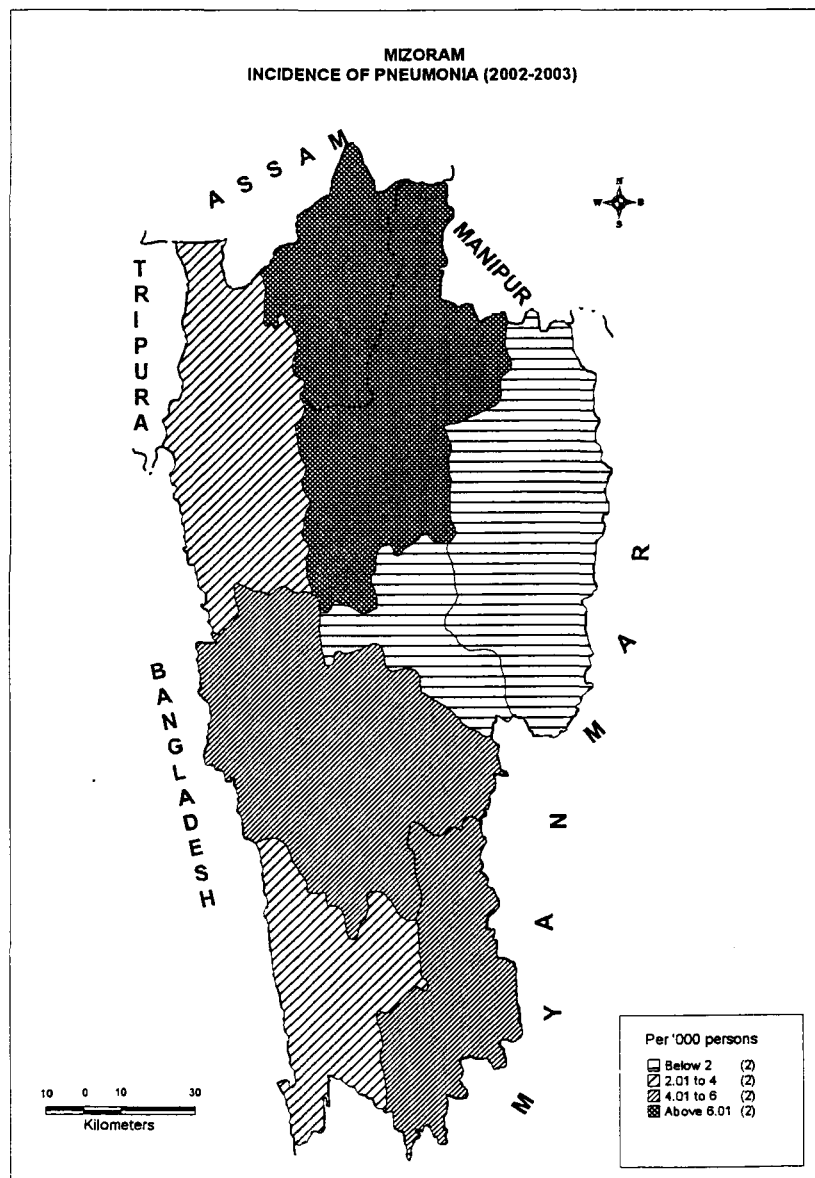


Fig. 4.12

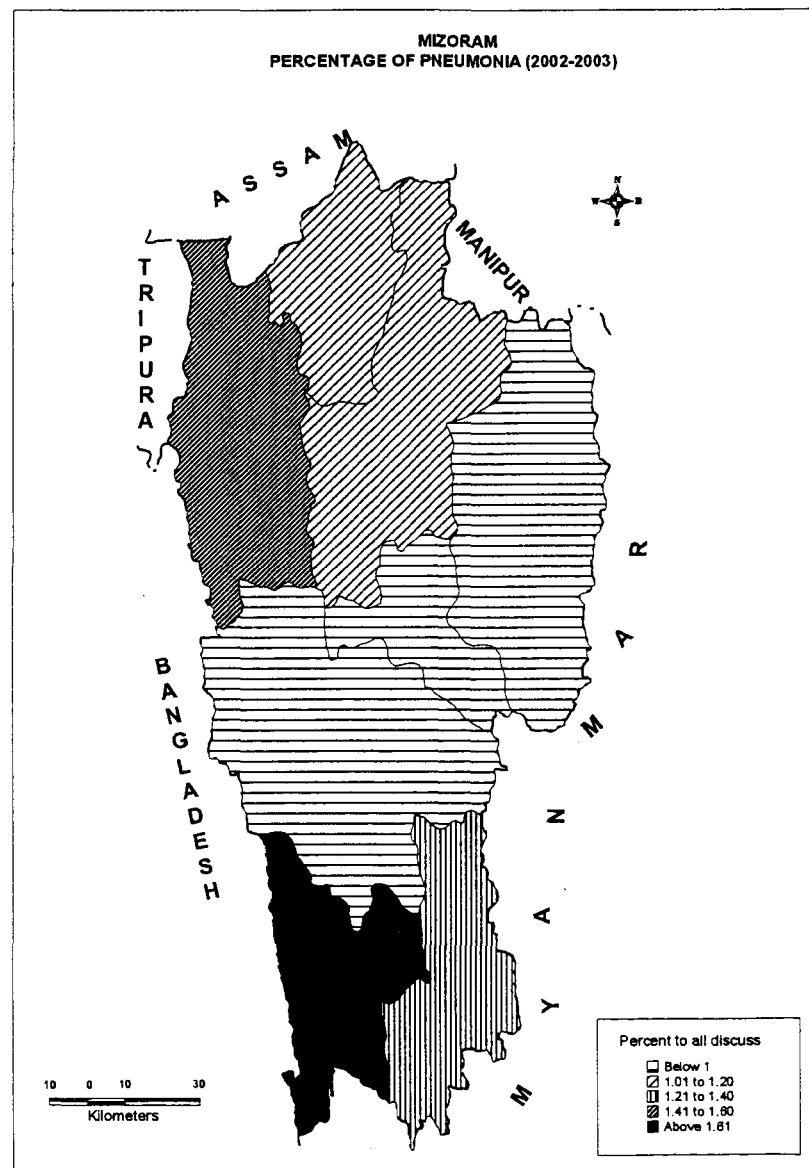


Fig. 4.13

pneumonia. The two districts in the eastern most part of high altitude zone of the state, Champhai and Serchhip represent a region of the lowest pneumonia infestation. In general, reported cases of pneumonia tend to be higher in the western ridges and valley province of the state when compared to the eastern mountainous region. The percentage share of pneumonia to all reported diseases in none of the districts is higher than 2 per cent. Slight variations in the percentage share of pneumonia for each district reveal that the districts that record high incidence per thousand persons do not necessarily record higher percentage share of the disease to all reported diseases.

Although the monthly percentage share of pneumonia cases plotted for each district (Figure 4.11, Pneumonia) does not give broad seasonal patterns applicable to all districts, it is understood that cases of pneumonia tend to rise from rainy season until the beginning of winter (July to Oct)

4.6.5 Viral Hepatitis

Hepatitis is inflammation of the liver. Acute, infectious hepatitis was recognized in 1885, but the first infectious agent (HBV) was not identified until the 1960's. HAV was isolated in 1973, but this still left many cases which could not be ascribed to either virus. Several different viruses cause viral hepatitis. They are named the hepatitis A, B, C, D, and E viruses. All of these viruses cause acute or short-term viral hepatitis. The hepatitis B, C, and D viruses can also cause chronic hepatitis, in which the infection is prolonged, sometimes lifelong. Some cases of viral hepatitis cannot be attributed to the hepatitis A, B, C, D, or E viruses. This is called non A-E hepatitis. Scientists continue to study the causes of non A-E hepatitis. Symptoms include, jaundice (yellowing of the

skin and eyes), fatigue, abdominal pain, loss of appetite, nausea, vomiting, diarrhea, low grade fever, headache.⁸⁸

The incidence of Viral Hepatitis⁸⁹ in terms of percentage share to all diseases and per thousand persons is almost insignificant. However, it has been noted earlier that the average annual death rate per thousand patients calculated for the five index years is as high as 38.24, i.e. Viral Hepatitis took a toll of about four for every hundred of its victims.

Table 4.13
Mizoram: Incidence of Viral Hepatitis

Name of District	per '000 persons	Percentage to all Diseases
Mamit	0.11	0.05
Kolasib	1.03	0.13
Aizawl	2.79	0.37
Champhai	0.14	0.05
Serchhip	0.04	0.01
Lunglei	0.47	0.10
Lawngtlai	0.08	0.06
Saiha	0	0
Mizoram	1.21	0.24

There is little variation in the prevalence of ViHe in various districts of Mizoram (Table 4.13). It is evident from the Map (Fig. 4.14) that Aizawl district exhibits the highest incidence per thousand persons (2.79). The percentage share of ViHe to all diseases too is highest for this district (Fig.4.15). Aizawl district with Kolasib district in the north forms a distinct belt of high incidence rate. The district of Kolasib records an

⁸⁸ Information Clearinghouse (NDDIC): *Viral Hepatitis: A Through E and Beyond National Digestive Diseases*, <http://www.niddk.nih.gov>, Internet: Date of download 10/ 7/05

⁸⁹ The researcher was told by an official in Mizoram State Epidemiology Cell that cases of Viral Hepatitis recorded in the health centres chiefly constitute Hepatitis A, as majority of the health centres under government unfortunately have no diagnosis facility for other strains of hepatitis.

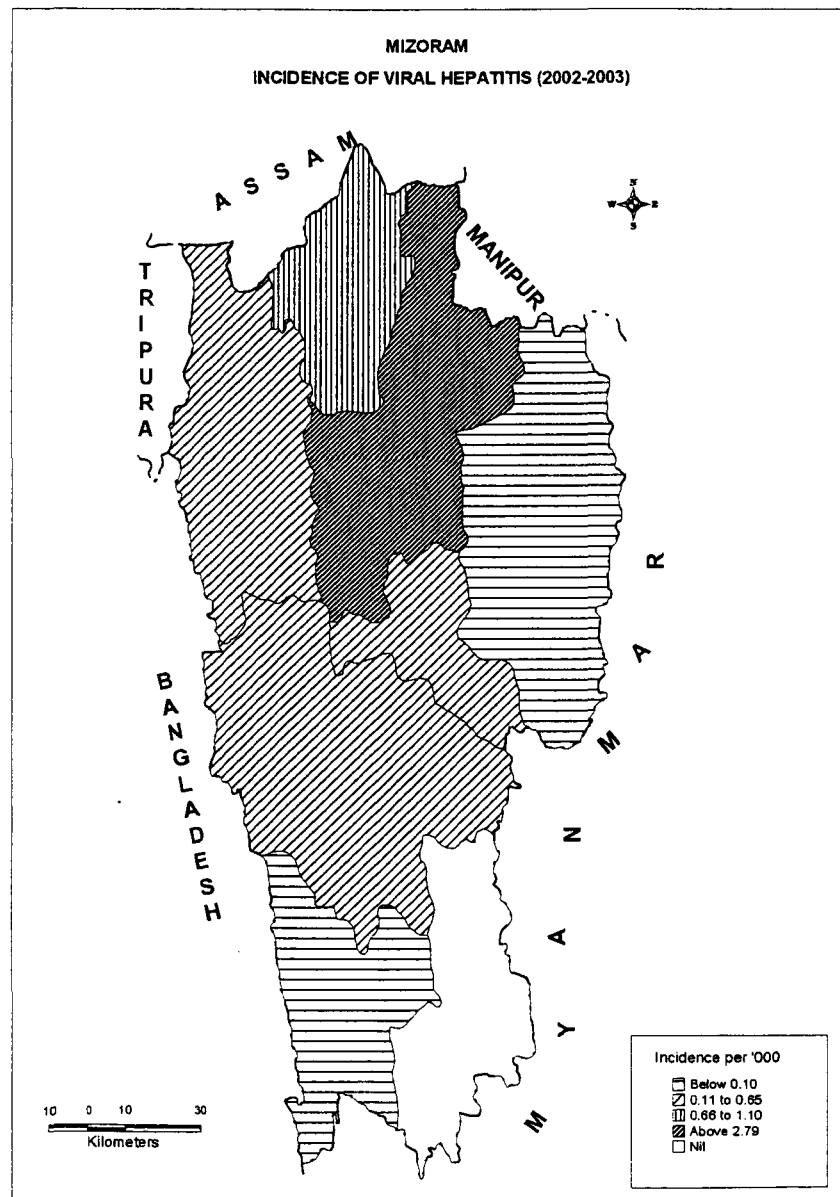


Fig. 4.14

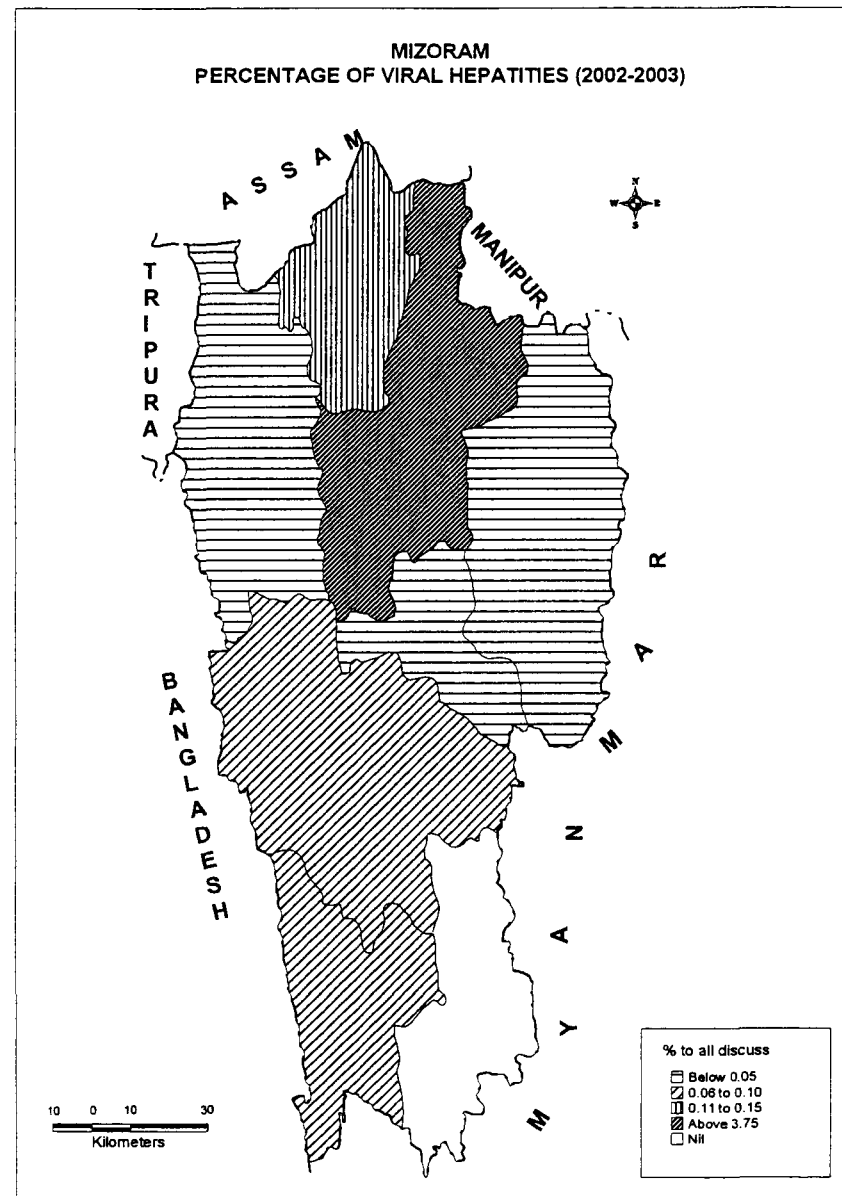


Fig. 4.15

incidence rate of 1.03 per thousand persons with percentage share 0.13 to all diseases. It is observed from the two maps that if one moves from north to south one finds the rate of incidence of ViHe decreased southward. It is remarkable that, during the Index year 2002-2003, no cases of ViHe have been reported in Saiha district located in the south eastern mountainous region.

The month wise percentile distribution of reported cases of ViHe shows that many districts record nil cases in some months thereby causing distortion in the trend of the graph (Fig.4.11). It appears, however, that the occurrence of ViHe intensifies just before the onset of monsoon and before winter i.e. the transitional periods of the seasons.

4.6.6 Pulmonary Tuberculosis

In an overwhelming number of cases, tuberculosis infections will begin in and affect the lungs. This condition is pulmonary tuberculosis. Pulmonary TB is also the major cause of TB-related morbidity and mortality.⁹⁰ Tuberculosis, which is also resurgent worldwide, is an infectious disease that affects the lungs and other body tissues. Tuberculosis of the lungs, the most commonly known form, is characterized by coughing up mucus and sputum, fever, weight loss, and chest pain. According to NFHS report the prevalence of active tuberculosis in the northeastern states ranges from 1,063 per 100,000 in Mizoram to 1,654 in Nagaland. The prevalence of tuberculosis in the

⁹⁰ Brown Medical School, Providence, RI 02912, USA, *Pulmonary Tuberculosis*, Internet, .Date of download 10/7/05

northeastern region is more than twice as high as in India as a whole (544 per 100, 00 population) in every state except Mizoram, where it is almost twice as high.⁹¹

The present study includes T.B only those cases of Pulmonary T.B recorded in the health-Centres and other types of TB are not included. Therefore, if we compare the computed value of Pulmonary TB incidence with that of the NFHS data the incidence rate is much lower.

Reported number of Pulmonary TB cases is very few for all districts and yet the computed value for institutional death per thousand patients is very high (67.44), i.e. nearly 7 out of every hundred PTB patient died of the disease. The occurrence of PTB, however, is a matter of grave concern.

Table 4.14
Incidence of Pulmonary Tuberculosis

Name of District	per '000 persons	Percentage to All Diseases
Mamit	0.10	0.04
Kolasib	1.56	0.20
Aizawl	1.46	0.19
Champhai	0.35	0.13
Serchhip	0.17	0.04
Lunglei	0.25	0.05
Lawngtlai	0.11	0.07
Saiha	0.88	0.30
Mizoram	1.08	0.21

Spatial variations in incidence of PTB disease is not very sharp when morbidity data is scrutinized at the district level (Fig.4.17). Aizawl district and Kolasib district again record the highest incidence rate per thousand persons, 1.46 and 1.56 respectively. Another district which record high incidence rate but lower than the state average of

⁹¹ NFHS -2 *op.cit.* p- 158

MIZORAM
INCIDENCE OF ACUTE RESPIRATORY INFECTION 92002-2003)

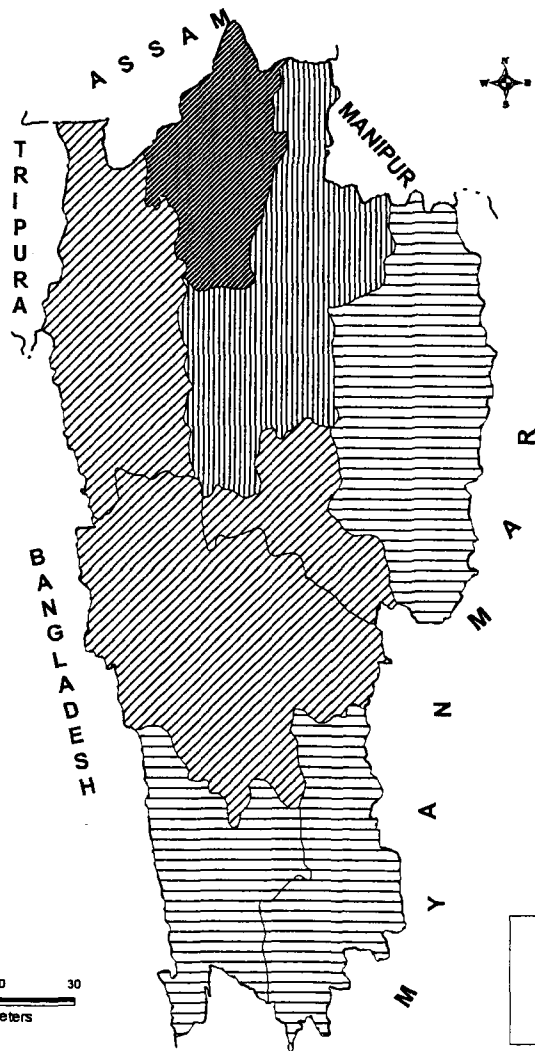


Fig. 4.17

MIZORAM
PERCENTAGE OF PULMONARY TUBERCULOSIS (2002-2003)

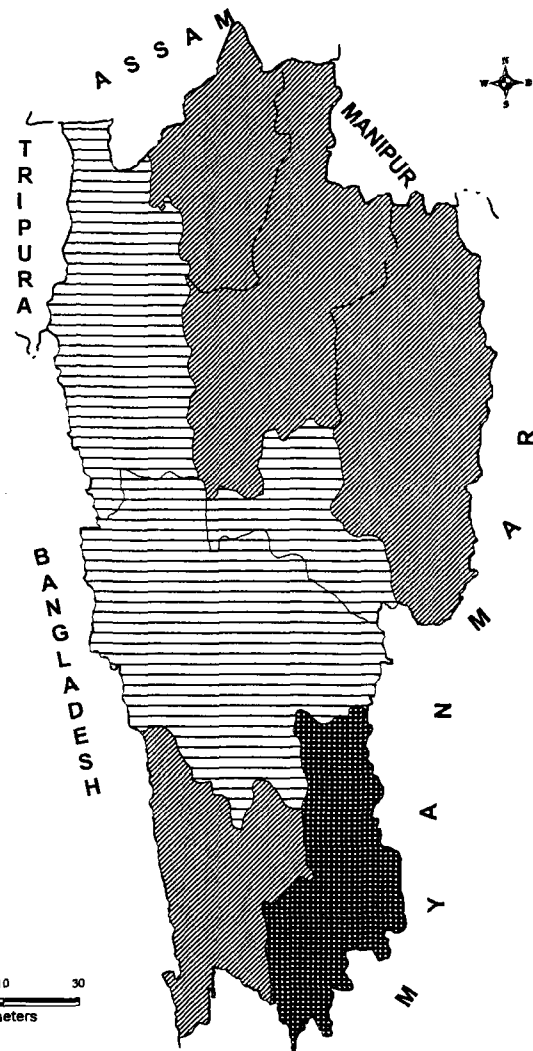


Fig. 4.18

1.08 is Saiha district located in the south west mountainous region (0.88 per thousand persons). Mamit district in the North western corner and Lawngtlai district in the south western corner of the state registered the lowest incidence rate of about 0.10 per thousand persons (both located in the low lying parts of the state). Low incidence rate but a little higher than this is found in Serchhip district. Champhai and Lunglei districts record incidence rate 0.35 and 0.25 per thousand persons respectively. The percentage share of PTB to all diseases is found to be highest for the district of Saiha (0.30 %), closely followed by Mamit 0.20 percent and then by Aizawl 0.19 percent and Champhai 0.13 per cent (Fig. 4.18).

The month wise incidence of PTB in many of the districts shows that no cases have been reported in some of the months (fig 4.16). The trend of the graph therefore is somewhat erratic and distorted as such generalization for seasonality of the disease is rather difficult.

4.6.7 Enteric fever

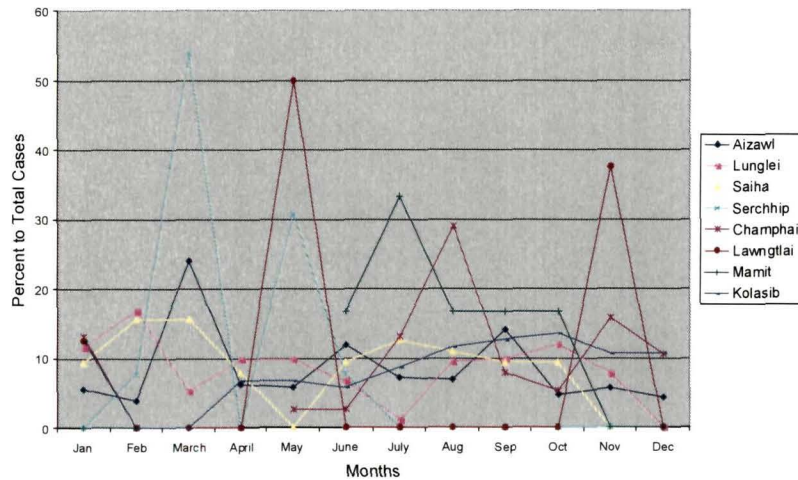
A gastrointestinal condition mainly in the developing world is caused by a bacterial infection, usually as a form of food poisoning.

Table 4.15
Mizoram: Incidence of Enteric Fever

Name of District	per '000 persons	Percentage to All Diseases
Mamit	0.05	0.02
Kolasib	0.91	0.12
Aizawl	0.52	0.07
Champhai	0	0
Serchhip	0.02	0.01
Lunglei	1.97	0.4
Lawngtlai	0.11	0.07
Saiha	0.07	0.02
Mizoram	0.31	0.06

Mizoram: Seasonality of Diseases, 2002, District-Wise

Pulmonary Tuberculosis



Enteric Fever

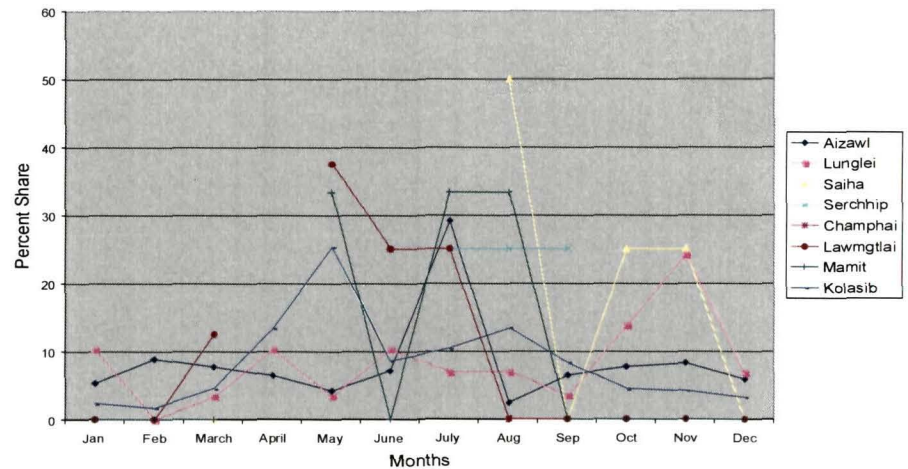


Fig. 4.16

The incidence of Enteric Fever just like the previous three specified diseases seems very insignificant in almost all the districts of Mizoram (Table 4.15). However, the institutional deaths per thousand patients calculated for the disease as has been shown earlier in this chapter was 16.92. A patient or two for every hundred persons who acquired Enteric Fever expired as they fail to cope with the effect.

Figures 4.19& 4.20 depict the spatial incidence of Enteric Fever in Mizoram. Lunglei district records the highest incidence rate both in terms of per thousand persons and percent share. In this district, almost two in every thousand population suffered from EnFe during the index year (i.e. 1.97 /thousand). The two most urbanized districts, Kolasib and Aizawl forms another belt of high endemic region for this disease. The remaining four districts, Lawngtlai, Saiha Mamit, and Serchhip display incidence rate below the State average (i.e. 0.31 per thousand persons) in decreasing order of importance. It is astonishing to note that during the index year the eastern most district of the state Champhai locate in the high altitudinal zone of the sate presents nil report for Enteric Fever.

Month wise percent share of reported cases (Fig. 4.16) shows that institutional cases of Enteric Fever is found to be higher just before and during monsoon season (May – Sept)

It is obvious that diseases like Pneumonia, EnFe, and PTB etc, apparently less dramatic diseases record higher rate of institutional deaths than those of more dramatic disease, like ARI and ADD.

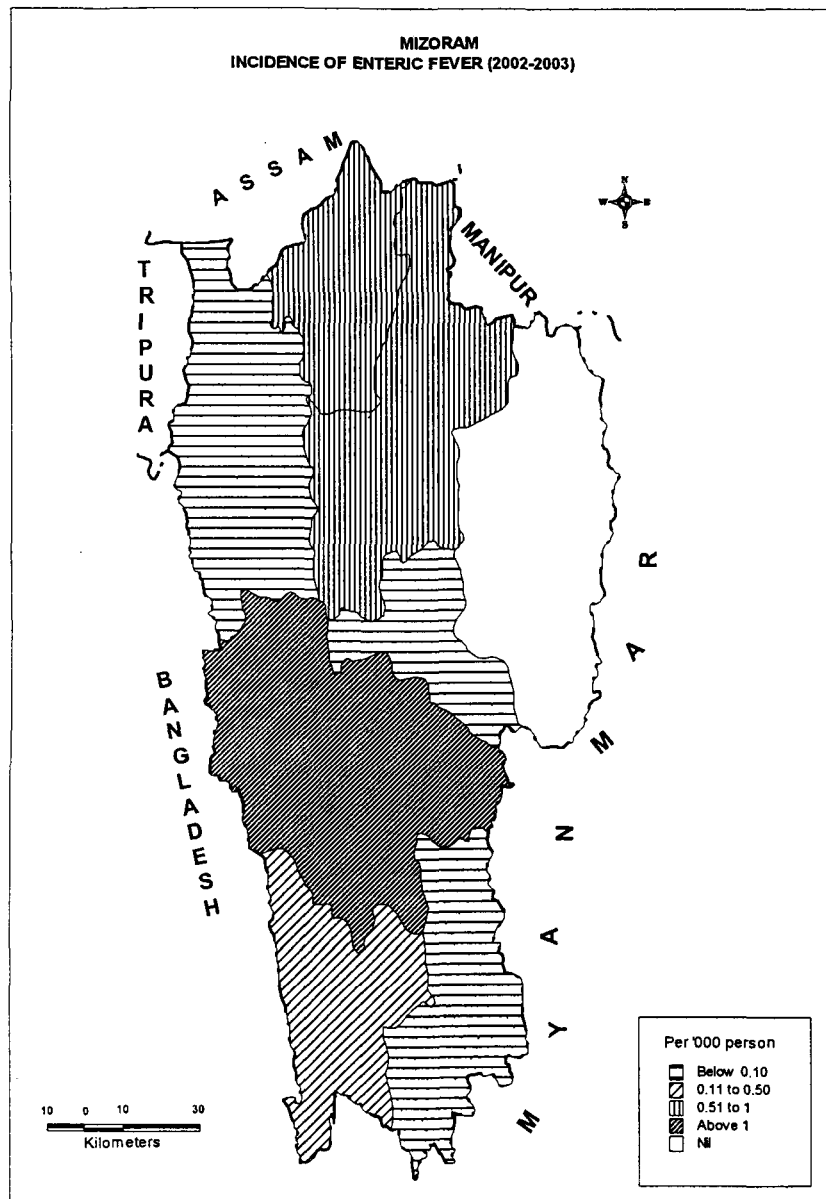


Fig. 4.19

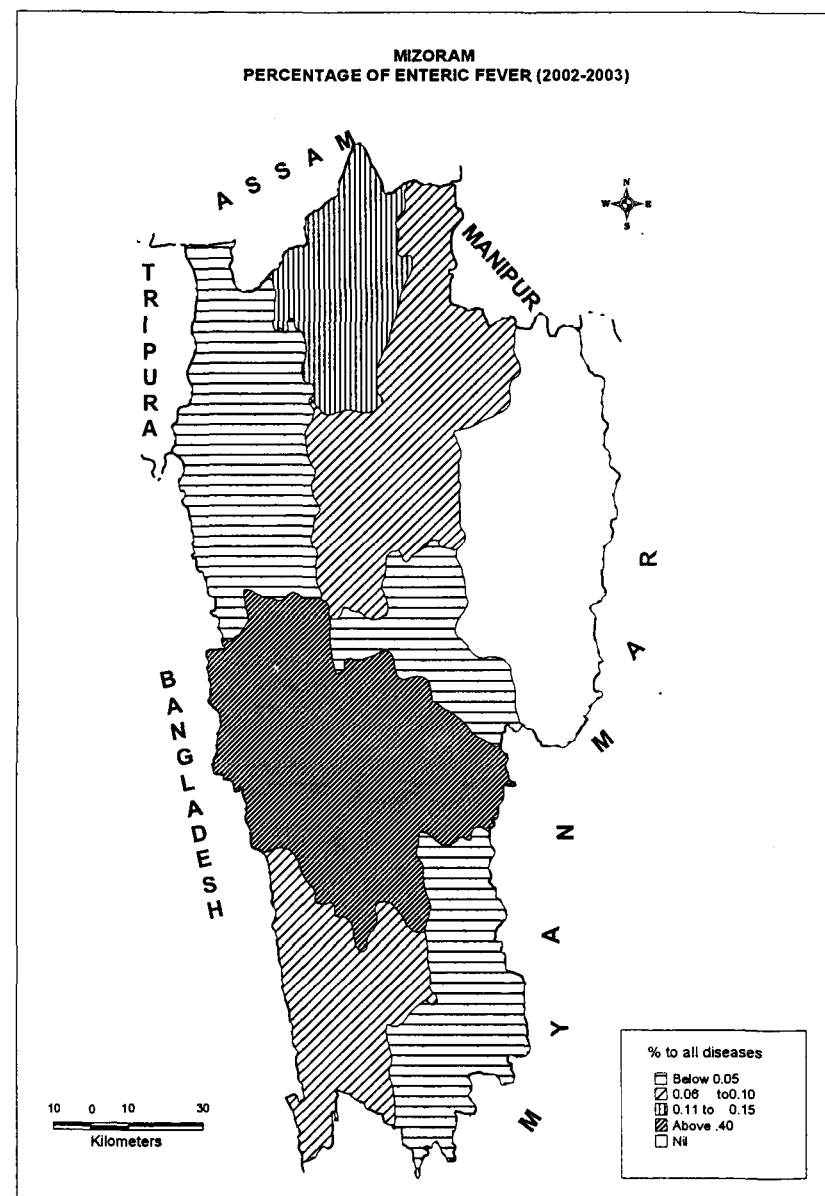


Fig. 4.20

4.7 Malaria - Leading Cause of Morbidity and Mortality

Malaria parasites have been with us since the dawn of time. They probably originated in Africa (along with mankind) and fossils of mosquitoes up to 30 million years old show that the vector for malaria was present well before the earliest history. The Plasmodium parasites are highly specific, with man as the only vertebrate host and Anopheles mosquitoes as the vectors. Malaria is generally endemic in the tropics, with extensions into the subtropics. At present, at least 300,000,000 people are affected by malaria globally, and there are between 1,000,000 and 1,500,000 malaria deaths per year.⁹²

In India no disease has taken toll of such a large number of human being as malaria. Moreover it saps the vitality of millions of people and forces them towards poverty⁹³. In India malaria is a serious health problem in forest related areas, particularly in the North Eastern states, Bihar, Orissa, Gujarat, Maharashtra and Madhya Pradesh where 40% of the cases are *P. falciparum*. Foci of malaria *falciparum* resistant to chloroquine and S-P have been found in N-E states and in Karnataka state. Around 2,500,000 lab confirmed cases are reported at Slide Positive Rate 3% annually (WHO: 2000)

Malaria has been discussed separately, as the disease is continuously being ranked as one of the leading causes of morbidity and mortality in Mizoram. It has been observed that two units/sections, viz, The State Epidemiology Cell and Malaria

⁹²WHO: "History of Plasmodium Parasites, Introduction", Tropical Disease Research, or <http://www.wehi.edu.au/MalDB->, www.in.html, Date of download 10/7/05

⁹³ S. Pacholi (1993) *Medical Geography of Malaria in Madhya Pradesh*, New Delhi.p.p .63-93.

Eradication Programme (under the umbrella of the National Vector Borne Diseases Control Programme) under Directorate of Health Services, Mizoram maintained morbidity data for malaria independently. Records maintained by State Epidemiology section is pervasive and includes probable or clinically diagnosed cases i.e. patients who are suspected to have malaria based on clinical signs and symptoms and who receive treatment for malaria but not confirmed by laboratory diagnosis. Laboratory diagnosis consists of either slide microscopy or a rapid diagnostic test (World Malaria Report). The Malaria Programme Unit on the other hand includes only laboratory diagnosed cases of malaria. It is obvious therefore that malaria data furnished by the two units are quite different and even a magnitude of three fold difference is noticed. As recorded by the State Epidemiology Cell on disease burden. (April 1996 – March 2001), malaria topped the list for all the five reporting years (See Appendix-X). As per the record of the Economic and Statistics Department, Mizoram, Cancer has overtaken malaria as the leading cause of mortality in the state in the calendar year 2004. In an area fraught with hovering mosquitoes, malaria remains the second leading cause of mortality and records as many as 359 medically certified deaths in the above reference year.

Table 4.16
Mizoram: Malaria - Morbidity and Mortality

Source	Year	No. of Cases	Deaths
Malaria Programme (NVBDP) (Laboratory Confirmed Cases)	2000	8117	33*
	2004	7830	72*
State Epidemiology (Laboratory confirmed & Clinical Cases)	2000-2001	30854	112*
	2004-2005	29468	13*
Registrar of Births and Deaths (Economics & Statistics Department)	2004	-	500 359*
* Medically Certified			

Inference can be drawn from table 4.16 that the number of malaria cases recorded by the State Epidemiology which includes clinical malaria is more than three fold the cases registered by the Malaria Eradication Programme. It should be borne in mind when analyzing the State Epidemiology data that it includes only confirmed cases, therefore, it is likely that actual incidence and deaths due to malaria would have been much higher than this record.

4.7.1 Incidence and Deaths

Morbidity and Mortality patterns of Malaria in Mizoram for five consecutive years have been tabulated as below (also see Appendix- XI).

Table 4.17
Mizoram: Incidence and Deaths due to Malaria (Laboratory Confirmed Cases)⁹⁴

Year	Population	BSE	ABER	API	Pf %	Death per '000 Patients
2000	783712	197481	25.19	10.35	59.20	4.07
2001	806845	204492	25.34	12.30	59.97	4.33
2002	813639	219522	26.98	9.65	50.03	4.45
2003	905689	203188	22.43	8.05	57.14	6.58
2004	905689	217316	23.99	8.64	53.25	9.19

Source: State Malaria Eradication Programme, Mizoram.

It appears that if we compare the Annual Parasite Incidence/Index (henceforth, API or incidence per thousand persons) of the year 2000 (10.35) with that of 2004 (8.60) there is significant decline in the rate of malaria incidence. However, in between these two years the API tend to fluctuate so much so that there is no stability in the reduction trend of malaria incidence (Table 4.17). The peak year for malaria incidence as shown

⁹⁴ Population = Counted /estimated by Malaria Control Unit after every two years
BSE = Total Blood Slide Examination
ABER = Annual Blood Examination Rate
API = Annual Parasite Incidence or Index /Per thousand persons

by the table is the year 2001 (12.30) and then significantly gone down until 2003 but slightly rose again in the year 2004.

The *P.falciparum* percentage to total confirmed malaria cases i.e. Slide Falciparum Rate (SFR) is higher than 50 percent consecutively for five years. The year 2001 records the highest SFR i.e. 59.97 percent but abruptly declined to 50.03 percent in the subsequent year i.e. 2002. However, resurgence of the parasite *P.falciparum* is noticeable in the next two succeeding years, SFR 57.15 percent and 53.25 percent respectively for the year 2003 and 2004. The high incidence of malaria due to the parasite PF in the state needs be given special attention as almost all deaths due to malaria occur due to the malaria parasite Plasmodium *Falciparum* (PF)

It is disheartening to note that incidence of deaths per thousand patients for malaria has continuously been increasing since the year 2000 till 2004 in opposition to the popular expectation of significant improvement in the field of treating malaria patients. The high mortality rate due to Malaria in the State may be attributed partly to the predominance of the parasite *P.falciparum*. The parasite *P.falciparum* is comparatively fatal and may cause complication unless the patient seeks or receives medical help in time without delay.

4.7.2 Operational Efficiency – Annual Blood Examination Rate (ABER)

The UN Expert Committee on Malaria in 1964 recommended that the monthly number of blood slides examined should amount to at least 1 per cent of the population. In the modified Plan of Operation, the minimum prescribed is 10 per cent of the population in a year. ABER is an index of operational efficiency. The annual parasite

incidence (API) largely depends upon the annual blood collection and examination rates. A sufficient number of blood slides must be systematically obtained and examined for malaria parasite to work out accurately annual parasite incidence (API).⁹⁵

The ABER in Mizoram during the period 2000-2004 shows that blood examination covers at least 22 percent of the total population every year (table 4.17), while the minimum prescribed is 10 per cent of the population in a year. The operational efficiency of malaria eradication programme in Mizoram as indicated by the ABER parameter therefore is quite commendable. Needless to say, ABER itself depends upon the intensity of probable cases of malaria, i.e. persistence of its symptom like fever, headache etc among individuals. Theoretically speaking, people do not usually go for blood examination unless the symptoms persist.

4.7.3 District Level Patterns

The analysis of districts level morbidity and mortality data of malaria is expected to reveal certain underlying processes involved in the spatial patterns of malaria occurrence in the state.

It can be infer from table 4.18 that malaria is a male dominated disease. In 2003, all the districts of Mizoram have recorded comparatively higher percentage share of malaria cases for males when compared to females. If we compare male- female divide in percentage shares of both positive cases and *P.falciparum* cases, Champhai district and Mamit district, in that order, display excessive male dominance, 74.60 percent of positive cases and 80 percent PF and 67.34 percent positive cases and 38.07 percent PF

⁹⁵ K. Park (1997): *Textbook on Preventive and Social Medicine*, Fifteenth Edition M/s Banarsidas Bhanot Publishers, p - 194

cases respectively. Kolasib district lying in close proximity to Mamit however exhibits the lowest gender difference in malaria positive cases. It is interesting to note that Saiha district exhibits a rather unique situation wherein the proportion of males is significantly higher than that of females in respect of Malaria positive cases (58.09 % and 41.91 %). In stark contrast, the proportion of *P.falciparum* for females unlike other districts is considerably higher than that of males (45.14 % and 54.86 % respectively).

Table 4.18
Mizoram: Male – Female Divide in Percentage Share of Malaria, 2003

Name of District	Malaria Positive Cases			Plasmodium <i>Falciparum</i>		
	Male	Female	Total	Male	Female	Total
Mamit	67.34	32.66	100	61.93	38.07	100
Kolasib	54.29	45.71	100	55.68	44.32	100
Aizawl	62.07	37.93	100	61.31	38.69	100
Champhai	74.60	25.40	100	80.00	20.00	100
Serchhip	64.87	35.13	100	68.87	31.13	100
Lunglei	56.56	43.44	100	59.55	40.45	100
Lawngtlai	54.02	45.98	100	59.01	40.99	100
Saiha	58.09	41.91	100	45.14	54.86	100
Mizoram	58.43	41.57	100	58.66	41.34	100

Source: Computed from State Malaria Eradication Programme data.

Malaria which emerged as a male selective disease from a close scrutiny of the district level data may be attributed primarily to the more frequent outdoor exposure of males than females subject to their occupational patterns and life styles. As K.Park puts it “Malaria is predominantly a rural disease and is closely related to agricultural practices.”⁹⁶

In order to assess the spatial manifestation of malaria, morbidity data for three consecutive years (i.e. 2002, 2003, and 2004) at the district level have been combined and mapped (Fig.4.21). The percentage share of *P. falciparum* cases to total cases has

⁹⁶ Park. K. (1997) *ibid.* p- 192

also been mapped as Fig. 4.23. The high incidence of Malaria *P.falciparum* is considered a matter of serious concern and as it is so fatal that the main cause of mortality due to malaria relates to the genus *P.falciparum* parasite.

Figure 4.21 displays broad spatial patterns of Malaria incidence in Mizoram. Kolasib district (part of the undivided Aizawl district) situated in the northern most part of the state at a comparatively low altitude zone near Assam, emerged as malaria hyper-endemic area as it exhibits an excessively high API i.e. an average 26.76 per thousand persons for the three index years. Three districts, viz Mamit district (formerly part of undivided Aizawl district) spreading in the western part of low altitude zone of the state, bordering Tripura and Bangladesh, Lunglei district half of which lies in the south western comparatively low altitudinal zone and is bounded on the west by Bangladesh, Saiha district lying in the south eastern mountainous province near Myanmar border constitute another malaria endemic belt of medium intensity. Aizawl district, Serchhip district and the eastern most district of the state Champhai (all formed part of the undivided Aizawl district) registered API lower than the state average (8.75 per thousand persons) and together forms a low endemic belt of malaria. The general pattern observable at the district level is that districts lying in the western low altitude zone generally depict higher incidence of malaria positive cases when compared with the districts in the eastern comparatively high mountainous region. In stark contrast, Lawngtlai district (part of former Chhimtuipui district) situated in the south western low relief region of the state near Bangladesh border represents low endemic belt of malaria.

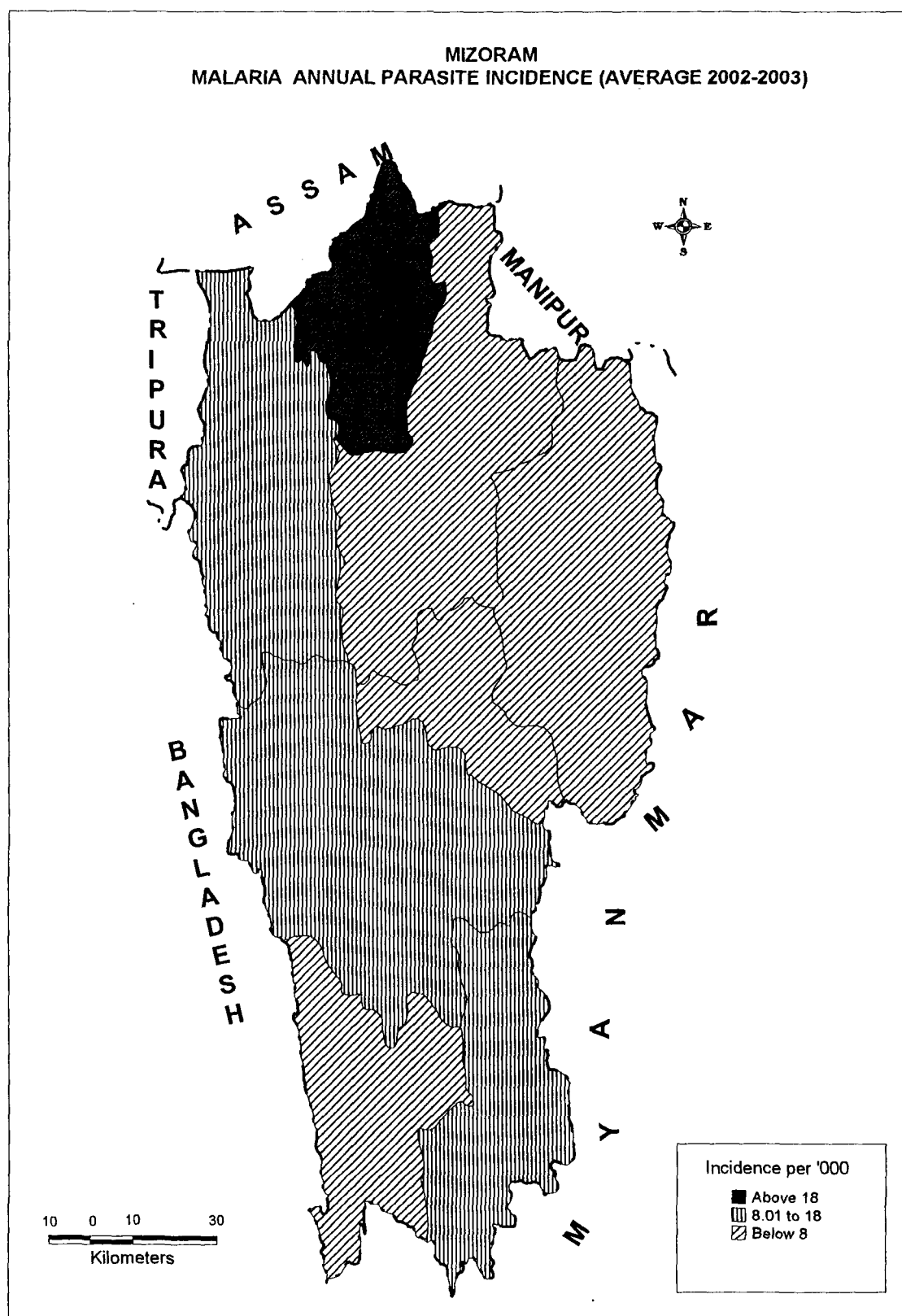


Fig. 4.21

Figure 4.23 depicts the patterns of malaria PF occurrence at the district level i.e. Slide Falciparum Rate (SFR) represented by the percentage share of *P.falciparum* to Total positive Cases. Mamit district (part of undivided Aizawl district) which exhibits the highest API again surpassed all other districts in the percentage share of malaria *P.falciparum* to total cases (SFR 89.33). The three districts, Aizawl, Lunglei and Champhai which formed low endemic belt of malaria interestingly record SFR higher than the state average (53.39 %) and together represent the second highest malaria endemic belt. The low lying region bordering Bangladesh viz Lawngtlai district, Mamit district and some part of Lunglei district registered the lowest SFR.

The district level pattern of malaria *P.falciparum* occurrence suggests that *P.falciparum* cases are more pronounced in the north and eastern higher altitudinal region of the state. The only exception to this however is Saiha district which lies in the highest relief region of the state but records very low SFR.

As evidenced by the month wise percentage share of reported cases of malaria plotted in graph (figure 4.22) malaria has a well-defined peak season in Mizoram i.e. the monsoon or rainy season (June –September). Even though malaria cases have been reported in every district in each and every month throughout the year, majority of the reported cases occur during the monsoon seasons in each district.

4.7.4 Death per thousand Patients

Institutional death per thousand patients might be considered an important index of assessing the effectiveness of available health care services in treating malarial patients. It should be borne in mind however that all patients confirmed positive by the

Mizoram: Seasonality of Malaria, District-Wise (Average of Two Years)

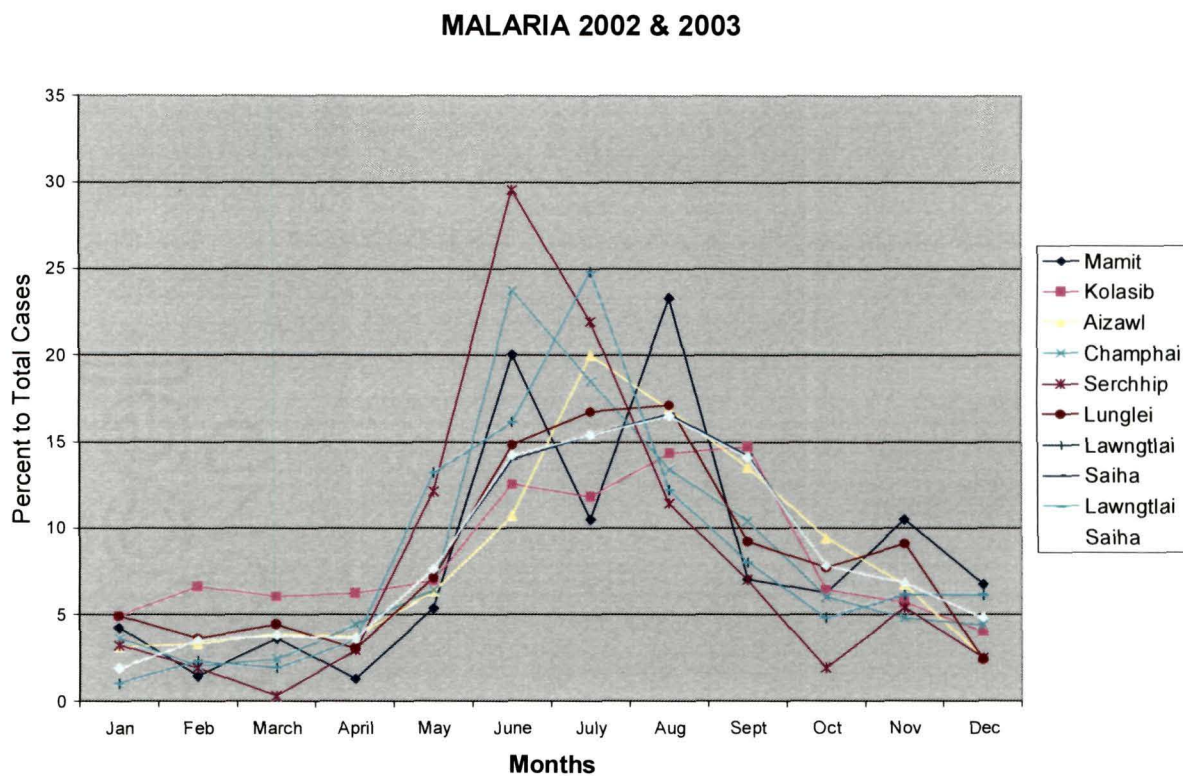


Fig. 4.22

examination of blood slide in health centre do not necessarily get treatment in the health institution thereby causing under enumeration of institutional deaths. It is possible that while the system of treatment available in the health institution is quite effective, late detection and delay in treatment due to the ignorance of the patient may raise the institutional death rate of malaria significantly.

Table 4.19
Mizoram: Incidence and Deaths due to Malaria, Annual Average (2002-04)

Name of District	API (per '000 persons)	PF %	Death per '000 Patients
Mamit	17.17	33.96	7.76
Kolasib	26.76	89.33	2.40
Aizawl	2.60	63.34	31.29
Champhai	1.72	54.58	4.99
Serchhip	5.74	68.32	31.58
Lunglei	17.50	41.69	0.79
Lawngtlai	3.73	66.04	0
Saiha	17.55	11.43	0
Mizoram	8.75	53.39	6.74

Only Laboratory Confirmed Cases.

Source: Compiled & Computed from Mizoram State Malaria Eradication Programme Record.

It can be seen from table 4.19, average death per thousand patients calculated for the three index years is the highest in the district of Aizawl and Serchhip i.e. above 31 per thousand patients followed by Mamit district (7.76 per thousand patients). The districts of Champhai and Kolasib record 4.99 and 2.40 deaths per thousand patients respectively. Lunglei district registered a very low mortality rate of 0.79 persons per thousand patients. It is surprising to note that Lawngtlai and Saiha districts both situated in the southern most part of the state do not record any confirmed cases of death due to malaria (Fig.4.24). Although one finds it difficult to explain such a contradictory situation as regard the district level pattern of confirmed cases of deaths due to malaria,

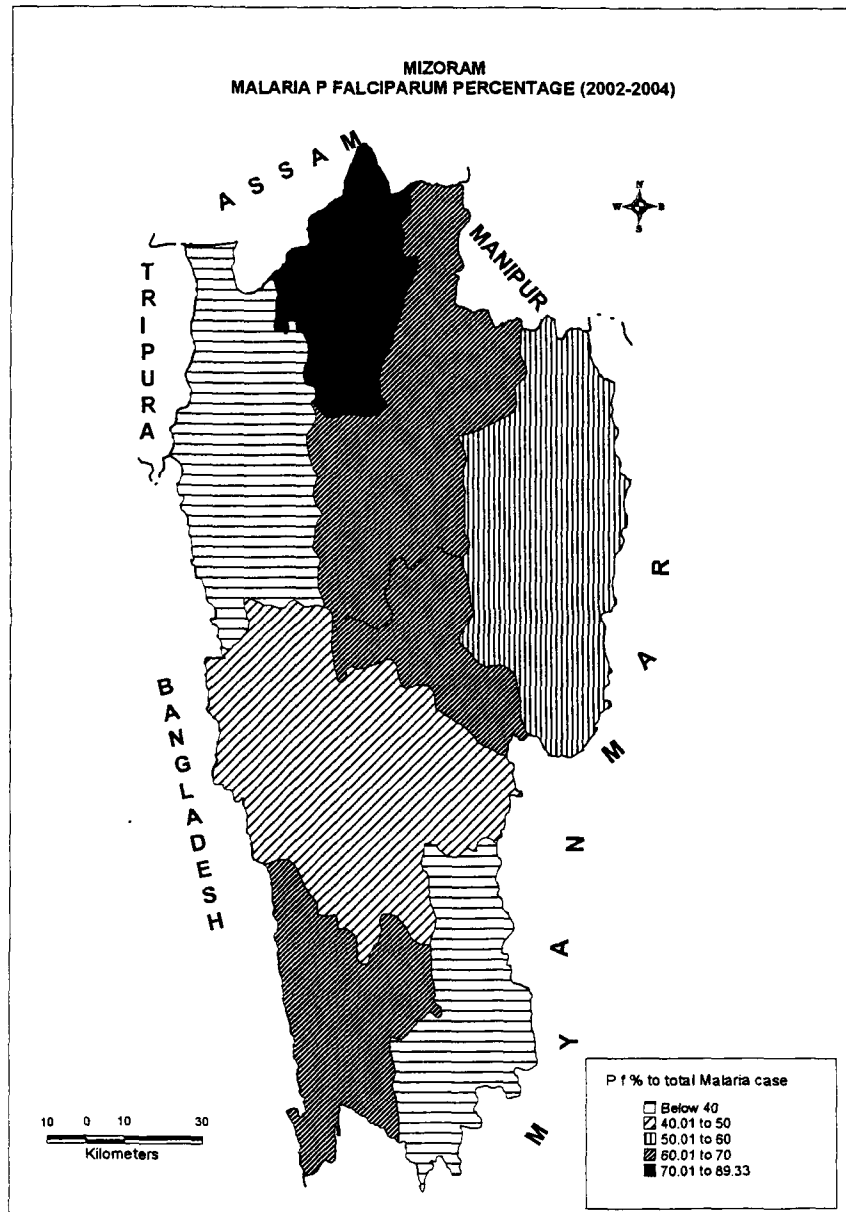


Fig. 4.23

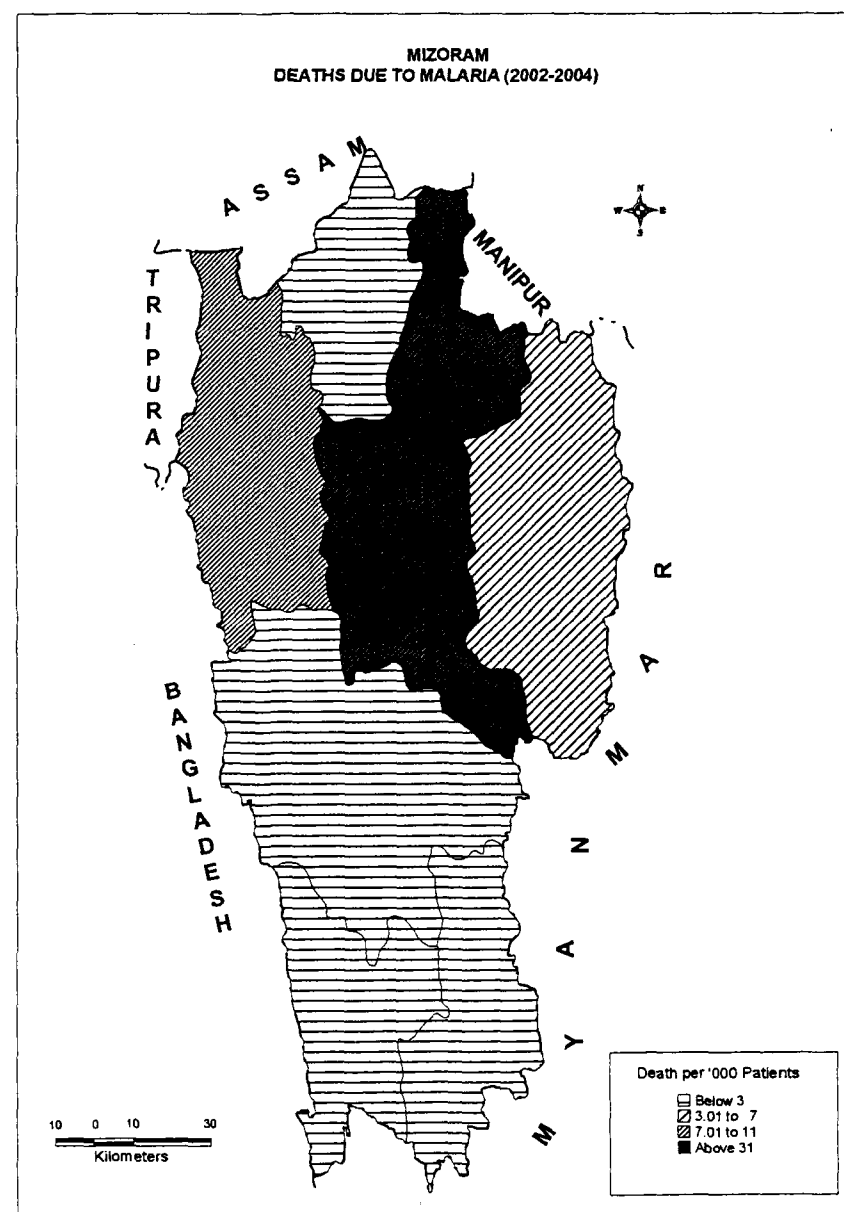


Fig. 4.24

it is true that mortality rate in each district can not be taken as a satisfactory explanation of the efficacy level of the available health care services. Where as Aizawl district that contain the biggest and best equipped hospital in the state (Aizawl civil hospital) records a very high mortality due to this disease another district Lunglei where the second biggest hospital Civil Hospital is established records a very low mortality due to malaria. In another instance, where as Kolasib district records the highest API and *P.falciparum* percent records a very low rate of deaths per thousand patients (2.40), Serchhip district that records comparatively lower incidence of malaria and *P.falciparum* percent exhibits a very high mortality as high as 31.58, even though the status of hospital and other health facilities in the two district is more or less the same. The district wise pattern of mortality due to malaria suggests that there are some hidden social or cultural processes involved in the nature of delivery of malaria treatment and consequently upon which confirmed/institutional deaths due to the disease is very low for some of the districts that record strikingly high malaria incidence.⁹⁷.

4.7.5 Block Level Patterns

Block level morbidity data might strengthen the spatial pattern already observed at the district level or a completely different picture might emerge when the data is

⁹⁷ In an informal discussion, the researcher was told by an official of Malaria Eradication Programme when asked his opinion on the reason why some areas recording significantly high incidence of malaria conversely record a fairly low institutional deaths, that many people mistakenly alleged quinine as detrimental to the life of patients with malaria accompanied by jaundice, hence, refused to go to health centres for treatment.. He opined this apparent social stigma as the chief reason for such contradictory situation. The Official asserted that Jaundice in such cases is the direct result of malaria parasite, which destroys the red blood cells of patients with malaria. For successful treatment, the parasite should be contained first with administration of quinine in the patient blood stream. He however, mentioned that care should be taken to stabilize such patients condition with the right dose of quinine to avoid possible complications as too much of quinine may cause hypoglycemia i.e. a condition in which blood sugar drops very low.

scrutinized at the block level. In order to examine the trend of malaria incidence over space the slide positive rate (SPR) and slide falciparum rate (SFR) for each block have been mapped for the year 2001(see Appendix-XII for table) . As stated by .Park “the slide positive rate and *falciparum* rate are useful parameters. They provide information on the trend of malaria transmission.” For the purpose of malaria regionalization the SPR is considered a better measure of prevalence than API as it is not necessarily affected by variations in the annual blood examination rates of the regions under compare.

It is evident from figure 4.25 that malaria hyper-endemic belt characterized by the highest SPR of above 8 per cent is formed by the western and northern low lying blocks of the State. The hyper-endemic belt broadly corresponds to the area lying close to the inter-state border and Indo-Bangladesh border in the west and areas close to Assam border in the North West. Malaria high endemic zone that records SPR of 6 - 8 percent is found in the south eastern high altitude region of the State. Medium endemic belt of 4 -6 percent SPR spreads in the southern half of the state as a buffer zone in between the hyper-endemic zone in the west and high endemic region in the east. To the north of this lies the low endemic area marked by 2 - 4 percent SPR. The low endemic belt runs in the middle of the state being sandwiched by the hyper-endemic belt and very low endemic belt of the east. Another low endemic belt interestingly is found in the extreme southern corner of the state near Bangladesh border. The lowest SPR rate of below 2 per cent is recorded by four blocks situated in the relatively high north eastern part of the State.

MIZORAM
MALARIA SLIDE POSITIVE RATE 2001
(BLOCK AS ON 1991)

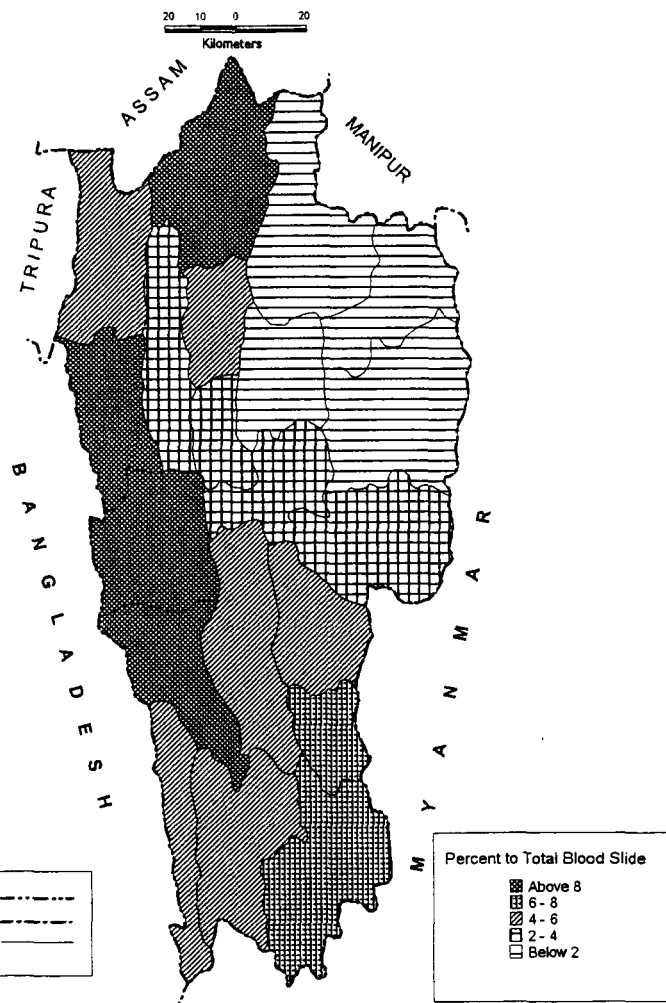


Fig. 4.25

MIZORAM
PERCENTAGE OF MALARIA P. FALCIPARUM 2001
(R.D. Block as on 1991)

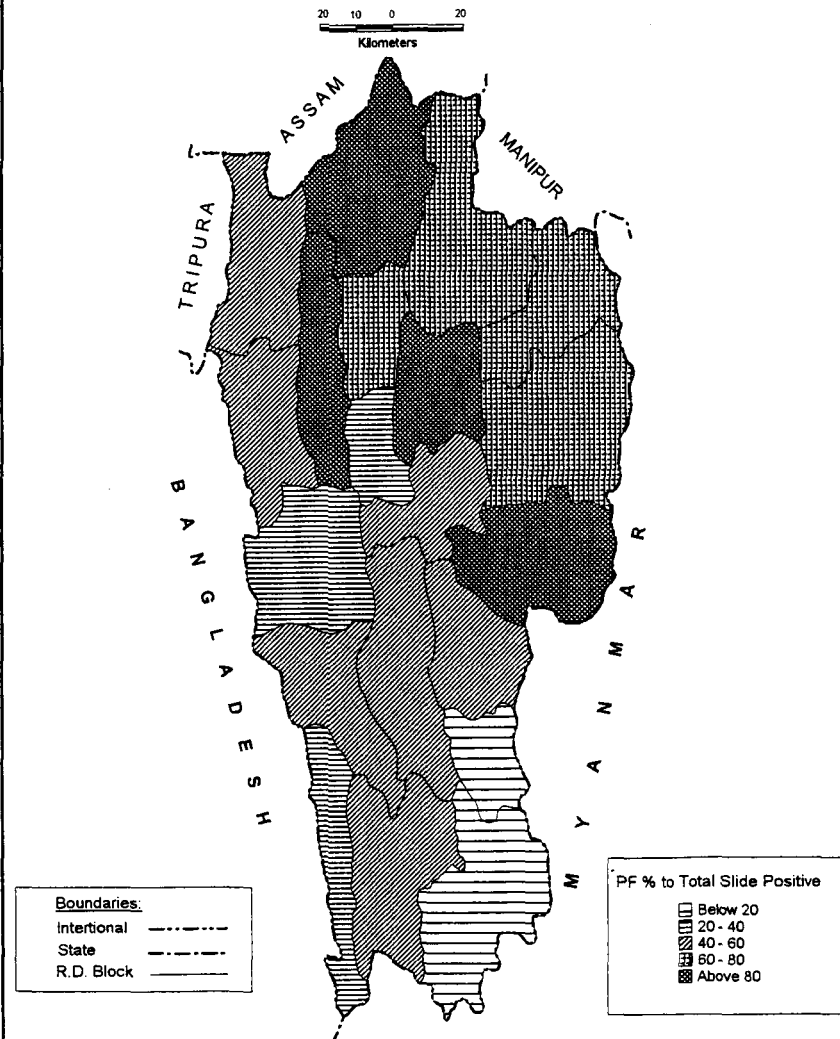


Fig. 4.26

The severity of malaria is related to the species of the parasite. The malaria parasite of genus *Plasmodium falciparum* (henceforth *P.falciparum*) needs be given special attention because almost all mortality due to malaria is related to this parasite and accounts for more than half the cases of malaria in the state i.e. Slide Falciparum Rate (SFR) 53.39 percent to total positive cases. It is evident from figure 4.26 that the entire hyper-endemic *P.falciparum* zone (above SFR 80 %) is to be found in the northern half of the state. High *P.falciparum* infested region of 60-80 percent spreads in the north eastern part of the state near the border of Myanmar and Manipur. A belt of medium *P.falciparum* endemic region with SFR 40-60 percent and low endemic region 20-40 percent SFR are constituted by the blocks situated mostly in the western comparatively low lying areas of the state bordering Bangladesh. The least dramatic *P.falciparum* province marked by SFR of below 20 per cent is formed by the two blocks situated in the extreme south-eastern part of the state characterized by towering mountainous ranges.

Interesting patterns have been observed in the relative dominance of *P. vivax* and *P. falciparum*, the blocks that registered high API value usually record lower rate of *P. falciparum* occurrence (SFR). This indicates that areas dominated by *P.vivax* usually record comparatively lower percentages of *P.falciparum* rate. The only exception to this rule is Thingdawl block of Kolasib district (part of former undivided Aizawl district) that exhibits the highest API and SFR value at the same time. As opposed to the observations made by Pacholi in Madhya Pradesh and Mukherji⁹⁸ in Meghalaya, in

⁹⁸ S.Mukherji(2004)'Prevalence of Major Diseases in Meghalaya' unpublished PhD Thesis, North-eastern Hill University, Shillong.

Mizoram the relative dominance of *P. vivax* over *P. falciparum* cases were found in the lower altitude regions of the western part of the state bordering Bangladesh. In Madhya Pradesh the *P. vivax* species occupied the higher altitude regions of colder climate.⁹⁹ In stark contrast, the higher altitude region of colder climate appears to be dominated by the *P. falciparum* in Mizoram.

4.8 Concluding Statement

The foregoing discussion on the pattern of prevalence diseases represented by reported cases of diseases in Mizoram leads to the following broad generalizations.

First, Among Principle communicable diseases, ARI and ADD, occurrence of which is related to the living environment, habits and sanitation are found to be most dramatic as far as the incidence rates are concerned. Apparently less dramatic diseases like PTB, ViHe, Pneu etc record very high mortality rates per thousand patients. It is observed from the trend of annual morbidity and mortality data at the state level that the existing health provision is not successful enough in so far as the improvement made in curbing or preventing the occurrence of these diseases are concerned.

Secondly, urban centres as the foci of health services and high literacy rates seem to generate better consciousness of health care among the people as reported cases of diseases tend to be higher in the districts which have large urban centres.

Thirdly, better facilities means better utilization is clearly brought out by the spatial pattern of incidence of various diseases that those areas which have both higher quality and quantity of health facilities like Aizawl, Lunglei, Kolasib districts usually

⁹⁹ Pacholi, S. (1993) Medical Geography of Malaria in Madhya Pradesh, New Delhi, p.63-93.

record comparatively higher rate of diseases incidence. However, utilization aspect of health care facilities should be analyzed more closely in the next chapter based on field survey of sample villages.

Fourthly, as regards the prevalence of diseases, malaria continues to be one of the leading causes of morbidity and mortality in the state. Significant variation in the occurrence of malaria in different parts of the state is observed. It has been observed that malaria hyper-endemic belt broadly corresponds to the area lying close to Indo-Bangladesh border in the west and areas close to Assam border in the low altitude North West part of the state. The relative dominance of *P. falciparum* and *P. vivax* strain of malaria parasite in relation to altitude in Mizoram is found to be just the reverse of the situation in Meghalaya and Madhya Pradesh. In these two states the *P. falciparum* usually dominates lower altitudinal zone but in Mizoram preponderance of *P. falciparum* in a relatively higher altitudinal zone, i.e. eastern higher altitudinal region of the state is noticeable. This may indicate the high adaptability of the *P. falciparum* parasites inside the vector Female Anopheles Mosquito.

Lastly, whereas the six selected communicable diseases statistically emerged as female selective, the occurrence of malaria is found to be higher among males in the study area. In course of the analysis of mortality and morbidity patterns of the study area it has been observed that recently the percentage share of communicable diseases to the total diseases has declined significantly, indicating that there has been a substantial increase in the incidence of non-communicable diseases such as hypertension, diabetes, cancer, road accidents, alcohol and drugs abuse. One reason for this appears to be

changes in lifestyles and growing stress of modern social life. One may hope that the relative dominance of communicable diseases over other diseases will soon assumes a continuous declining trend in the next few years switching over to the pattern facing more advanced societies, largely because morbidity seems to have been dominated by diseases other than communicable

CHAPTER-V

UTILIZATION AND CONSTRAINTS IN HEALTH CARE DELIVERY

5:1 Introductory Statement:

In the Indian health care system the public sector provides health services through a hierarchical network of health facilities. With this vast network, government facilities are the most accessible source of health care to the rural communities. This chapter made an attempt to assess utilization patterns of existing health care facility at micro-level and constraints in the delivery of health care through field based investigation. Five villages exhibiting certain degree of differences in location, site, situation and urban influences etc. are selected for close scrutiny. Attempt has also been made to understand the level of health consciousness of the people through structured household schedule. The field-based investigation has also made an attempt to assess constraints, if any, in the delivery of health care.

Health institutions record pertaining to morbidity data is often restricted to age sex and nature of illness and rarely includes occupation, literacy level and economic background of those who utilized these services. As such, the last section of this chapter includes analysis of information obtained from health care utilizers through a spot survey undertaken by the researcher in Aizawl Civil Hospital OPD (Out patient Department), the main purpose of which was to assess which section of the population utilizes this facility the most, the distance covered on the way to medical check up, nature of illness, literacy level and economic background of those who utilize the services.

5:2 Selected Sample Villages

As mentioned earlier, five Sample villages viz, Muallianpui, Buhchang, Hmawngbu, Thualthu and Seasawng located in diverse altitudinal regions of Mizoram have been chosen for conducting field investigation (see Fig. 5.1 for location). Primary data have been procured through questionnaire and interview of sample households located in these villages to unravel the ground reality of the pattern of utilization of health care facility in the state.

The studied villages have been chosen in such away as to represent villages located near urban centres and villages located comparatively far off from the urban centres. Purposive random sampling methods were used to select the villages while the households were selected on a random basis. The field work was discontinuous and was completed in a period of 18 months beginning with the winter of 2002.

Table 5.1 Profiles of Sample Villages

(a) General

Village	District	Block	Location	Average Altitude
Muallianpui	Lunglei	Hnahthial	Valley	1200 m
Buhchangphai	Kolasib	N.Thingdawl	Valley Plain	90 m
Hmawngbu	Lawngtlai	Lawngtlai	Hill Top	300 m
Thualthu	Lunglei	Lunglei	Hill slope	1200 m
Sesawng	Aizawl	Tlangnuam	Hill Top	900 m

Altitude determined from Topo-sheet No. 84, A, Survey of India.

5.2.1 ***Muallianpui village*** is located in Hnahthial Block of Lunglei district in the South-Eastern part of Mizoram in an inter-montane valley slope. The altitudinal location of the village falls in the relief region of 900 – 1200 metres above the mean sea level with an average altitude of 1200m. The distance of the village from the main road (NH – 54) is about 53 Kilometers. The nearest urban centre from the village is Hnahthial town, about

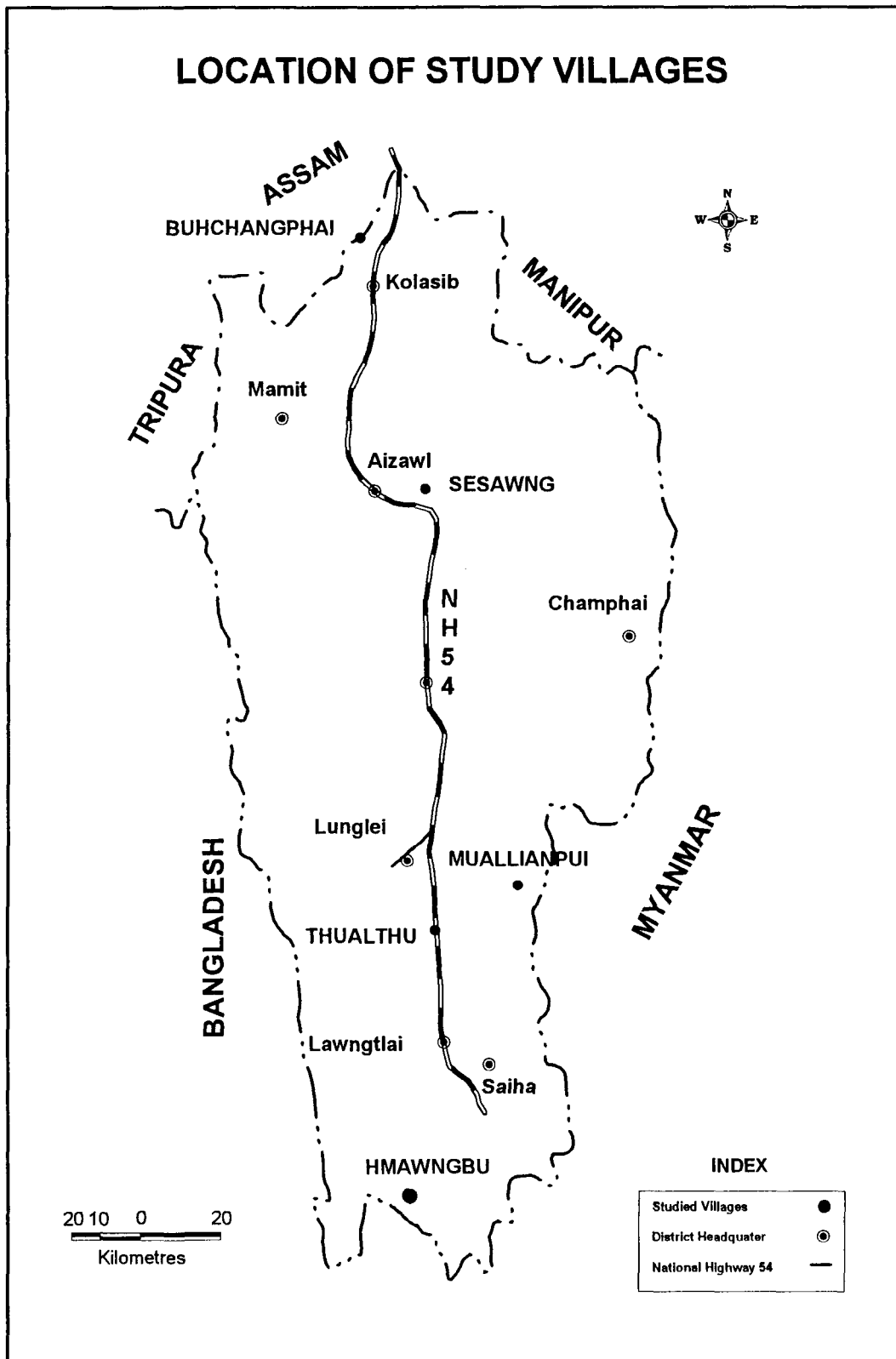


Fig. 5.1

seventy kilometres away. The type of road connecting the village from the main road is fare weathered jeep road. The main source of water is piped water in the form of public tab.

There are as may as 160 households consisting of a population 1009 in this village. Out of the total households, 60 households containing a population of 425 persons have been randomly selected for close scrutiny. Agriculture in the form of jhum (shifting cultivation) is the mainstay of almost all the sample households. The literates constitute as many as 79.85 per cent of the population. A little more than a half of the literate (58.88 %) population has had education only up to primary level. Nearly one-third of the literates (31.54 %) are educated up to middle school level. Only a chunk of the population attained the level of HSLC, HSSLC, Graduate and Post Graduate levels of education.

(b) General

Village	Nearest Urban Centre (in Km)	Distance from Main Road	Link Road	Mode of Comm.
Muallianpui	Hnahthial. (71)	53 Km	F.W	Jeep/LMV
Buhchangphai	Kolasib (20)	14 Km	F.W	Jeep/LMV
Hmawngbu	Lawngtlai (140)	7 Km	F.W	Jeep/LMV
Thualthu	Lunglei (30)	0 Km	N.H - 54	Bus
Sesawng	Aizawl (45)	4 Km	N.H - 54	Bus

F.W = Fair Weathered Road.

5.2.2 The second village **Buhchangphai** is located in N.Thingdawl Block of Kolasib district in a very low attitudinal zone of the valley plain, a few kilometres from the border of Assam in the north. The height of the village from sea level is about 80-90 metres. The distance of the Village from the main road (NH – 54) is about 14 Kilometers. The nearest urban centre from the village is Kolasib, about 20 kilometres

away. The road connecting the village from the main road is fair weathered jeep road. The main source of water is piped water through public tap.

As the village is located in one of the very few pockets where wetland cultivation is feasible in the state, Agriculture forms the backbone of the village economy. In this area jhum Cultivation and sedentary agriculture dominated by wet paddy go side by side. In all, the population of the village is 669 persons are distributed in as many as 118 households. Out of the total households, 40 households containing a population of 224 persons have been randomly selected. Among the five selected villages this is the only village where the sex ratio is in favour of males. The literate constitute above three fourths of the population 79.00 percent and about a half of them (50.42 %) attained only up to the level of primary education. The remaining half of the literates attained the educational level in the order of 21 %, 18.91 %, 8.40 %, and 1.26 % respectively for Middle, HSLC, HSSLC and Graduate. None of the literates attained the level of Post-Graduate education.

Table 5.2
Sample Village: Household Structure, Sex Ratio& Literacy.

Village	Sample Popn.	Sample H/H	Mean Sample H/H Size	Sex Ratio	Literacy Rate
Muallianpui	425	60	7.08	1043	79.85
Buhchangphai	224	40	5.60	1021	79.00
Hmawngbu	207	40	5.17	960	50.00
Thualthu	163	40	4.07	985	90.02
Sesawng	488	90	5.42	976	91.00

5.2.3 A village situated on top of hill, **Hmawngbu** in the extreme South Mizoram has also been selected for field investigation. The nearest urban centre, Lawngtlai lies 150 Km away. Among the five selected sample villages this is the only village which has no

health centre. However, the village is only 7 km away from the main road and the road connecting the main road is fare-weathered road. The main source of water is a stream running in close proximity to the village.

In all, the village has 686 settlers distributed into 118 household units. Forty households housing 207 persons have been randomly selected for household survey. Most of the sample households are engaged in traditional jhum cultivation. The literates make up only 50.00 % of the population. More than half the literates (63.83 %) attained only up to the level of primary. One-third of the literates (33. 19 %) acquired the level of middle education. Very few literates achieved HSLC and HSSLC and none goes beyond the level of HSSLC.

5.2.4 **Thualthu**, situated 30 Kms. away from Lunglei town typified road side settlement of recent origin. The original site of the village was hill top but now most of the houses have been shifted and spread along the National Highway -54. Hence, Thualthu village is the most accessible of all the sample villages. Public water tap forms the principal source of water supply.

Out of the total 126 households comprising 474 dwellers, 40 households with a population of 163 persons have been randomly selected for the survey. The literates constitutes 90.02 % of the total population with a vast majority (83.82 %) have had only up to primary education.

5.2.5 The fifth selected village **Sesawng** is a comparatively large village located in Tlangnuam R.D Block of Aizawl district. The village is linked with NH-54 by a metal

led road of 4 km long. The most urbanized settlement of the State Capital Aizawl is 45 Kms from this village. Piped water forms the main source of water supply.

Sample households numbering 90 comprising of 488 odd souls have been randomly selected for door-to-door interview. The percentage of literates to the total population is 91 of which about a half (52.15 %) constitutes literates up to primary level. Literacy levels of secondary, higher secondary and higher studies formed the remaining half distributed in decreasing order of significance in proportional share.

5:3 Existing Health Care Facilities in the Selected Villages:

Like all other traditional Indian villages, the Government serves as the sole provider of health-care to the people living in the selected sample villages.

Table 5. 3
Sample Village by Health-Care Facility Available

Name of Village	Health Personnel/Institution	Distance from the Nearest Place Where Available
Muallianpui	1 - Sub - Centre	PHC (15 Km)
	1 - Nurse	Govt.Doc (15 Km)
	2 - Health Worker	Private Doctor (123 Km)
	1 - Community Health Guide	Govt. & Pvt. Hospital (123 Km)
Buhchangphai	1 - Sub-Centre	PHC (20 Km)
	1 - Nurse	Hospital (50 Km)
	1 - Health Worker	Govt. & Private Doctor (50 Km)
Hmawngbu	- Nil -	Sub- Centre (40 Km)
		PHC (40 Km)
		Govt. Doctor (40 Km)
		Private Doctor (140 Km)
		Govt. & Pvt. Hospital (140 Km)
Thualthu	1 - Sub-Centre	Govt. Hospital
	1 - Nurse	Pvt. Hospital
	1 - Health Worker	Govt. Doctor
	1 - Community health Guide	Private Doctor
Sesawng	1 - Sub- Centre	Govt. Hospital (30 Km)
	1 - Community Health Guide	Pvt. Hospital (30 Km)
	1 - Health Worker	Private Doctor (30 Km)
	1 - Mid Wife / Nurse	
	1 - Govt. Doctor	

Out of the five selected village, only Hmawngbu Village has no health personnel even the CHW or health institution of any kind within the village (table 5.3). Situated on top of a hill, the village is 7 Km away from the main road, linked with fair weathered jeep road. The nearest health institution, Sub- Centre / PHC is 40 Kms. away from the village. The nearest urban centre where hospital is available is Lawngtlai town, 140 Kms away from this village.

The other sample villages, namely, Muallianpui, Buhchangphai, Thualthu and Sesawng have at least one Sub Centre, a Nurse, a Health Worker and a CHG (Community Health Guide.) each. However, none have Hospital and residential Doctor within the village. Villagers, especially of Muallianpui and Hmawngbu, need to go far a place, at least 120 Kilometers to avail of Hospital services.

It is true that the presence of health institutions and health personnels do not necessarily ensure good health-care services. The actual performances of the institution and health personals need be accorded higher importance to that of mere physical availability.

5.3.1 Health/Family Planning Worker

Under the Family Welfare Programme, health or family planning workers are required to regularly visit each household in their assigned area. During these contacts the female health or family planning worker is supposed to monitor various aspects of health of women and children provide information related to health and family planning, counsel and motivate women to adopt appropriate health and family planning practices,

and deliver other selected services.¹⁰⁰ The door-to-door visit of Health and Family Planning Worker, therefore, is considered an important attribute of the available health facility in the village.

Table 5.4
Distribution of Sample Household by Health /Family Planning worker visit (Last 12 Months)

Name of Village	Household Visited	Household Not Visited	Total
Muallianpui	88.33 %	11.67 %	100
Buhchangphai	95.00 %	5.00 %	100
Hmawngbu	0.00 %	100 %	100
Thualthu	91.18 %	8.82 %	100
Sesawng	65.71 %	34.29 %	100

As shown by table 5.4, majority of the sample households except those that in Hmawngbu village are visited by at least once by Health and Family Planning worker in twelve months preceding the survey. However, none of the households in Hmawngbu reported Health and Family Planning worker to have visited the village during the preceding twelve months.

5.4 Government Health Care Services: As Perceived by Sample Households

Health-care services in the village as perceived by the general public is taken as an important yard stick for assessing reasons for acceptance or non-acceptance of government run health care facility.

Table 5.5
Distribution of Sample Households by Say about Govt. Health Centre

Name of Village	Very Good	Adequate	Poor	Very Poor	Total
Muallianpui	- nil -	7.85 %	92.15 %	- nil -	100
Buhchangphai	- nil -	40.54 %	59.46 %	- nil -	100
Hmawngbu	Nil Facility in the Village				100
Thualthu	- nil -	- nil -	37.14 %	62.86 %	100
Sesawng	- nil -	68.57 %	31.43 %	- nil -	100

¹⁰⁰ NFHS – 2 op p- 257

The households' respondents were asked to make comment on the performance of the government health centre in the village. It is understood from table 5.5 that for most of the villages one finds the predominance of respondents who regard the existing health care facility in the village as poor to very poor. In stark contrast, more than two-third of the respondents in Sesawng village felt the health facility available within the village as adequate considering the level of institutional capacity and status.

5.4.1 Government Health Centre

The household schedule/questionnaire asked the respondents a number of questions (see appendix-XIV) to ascertain their perception of the quality of care they received during their most recent visit of the government health centre in the village.

When members of the household visited Government Health institution for treatment during the last one year preceding the survey, it was reported that many patients did not receive the service they went for whereas many other patients satisfactorily received the service they looked for.

In Muallianpui village, half of the patients who visited the health centre reported that they did not receive the service they went for (see table 5.6). About 16.67 percent availed of the services but without satisfaction, one - third of the patients reported that he/she received the service he/she went for with some degree of satisfaction.

In Buhchangphai village, about three-fourth of the patients who went to the health centre said that they received the service they went for. Only one third of the patient reported that they did not receive the desirable service and treatment.

Hmawngbu village has no health centre within the village. Few patients went to the nearest health centre and reported that they received the service they went for with satisfactory results. More than half of the patients visiting Government health centre in Thualthu village reported that they did not receive the service they went for and a little less than half claimed that they were satisfied with the service they have received in the Government health centre.

Table 5.6
Distribution of Sample Households by Experience in Government Health Centre

Question	Response	Muallianpui	Buhchangphai	Hmawngbu	Thualthu	Sesawng
Did he/she receive the Service he/she went for?	Yes	33.33 %	75.00 %	100 %	42.11 %	82.35 %
	No	50.00 %	-	-	-	-
	Received but not Satisfactory	16.67 %	25.00 %	-	57.89 %	17.65 %
Total		100	100	100	100	100
Did the Staff spent enough time with him/her?	Yes	100 %	100 %	100 %	42.11 %	100 %
	No	-	-	-	57.89 %	-
Total		100	100	100	100	100
How did the Staff talks to him/her?	Nicely	100 %	62.50 %	33.33 %	50.00 %	33.33 %
	Somewhat Nicely	-	37.50 %	66.67 %	22.22 %	66.67 %
	Not Nicely	-	-	-	27.78 %	-
Total		100	100	100	100	100
Cleanliness of the Health Facility	Very Clean	-	12.50 %	-	-	33.33 %
	Somewhat Clean	100 %	87.50 %	100 %	100 %	11.11 %
	Not Clean	-	-	-	-	55.56 %
Total		100	100	100	100	100

Most patients who visited Government health centres for treatment in Sesawng village said that they received the service they went for with satisfaction. Only 17.65% of the patients complained that they were not properly attended in the health centre.

When asked about the aspect of actual availability and attentiveness of the staff, all patients visiting the Government health centers in the sample villages, except few patients in Thualthu village, have reported that the staffs spent enough time with them to care for their sickness. Again, all the patients, except few in Thualthu village, who have visited the Government health centres for treatment, reported that the staffs talked to them either nicely or somewhat nicely. A little more than one-fourth of the patients visiting the health centre in Thualthu village recounted that the staff did not talk to them nicely during the visit.

Perceptions about the cleanliness of the Government Health facilities vary from person to person; almost all patients of the sample villages who have visited the health centre in the village remarked it as very clean or somewhat clean. However, about half of the patients treated in the health centre of Sesawng village expressed that the health facility was not clean enough.

The analysis of the performance of the Governments health centres from the reports given by patients visiting the centres reveal that, performances of most of the health personnel in the health centres were somewhat satisfactory. It seems probable that they have tried their level best with whatever the health infrastructure or equipments the health centre possessed. It is to be noted that most of the health sub centres are ill-equipped and hence often failed to provide the necessary treatment to the patients who were badly in need of their service. Many people in the sample households during the course of village survey asserted that health sub centre to them means a centre for pregnant women. It has been reported by many that they refused to go to the health sub

centres on ground only of poor equipment or lack of health infrastructures of the Sub centres.

5.4.2. *Preference for Medical Check up*

Needless to say various organizations, associations and individuals have made significant inroads into the health sector elsewhere in the world especially under urban environment. Health care delivery provided by private sector for many instances is rated higher to those that provided by government as the former embarked upon it as a business enterprise. Considering the economic background of people living in rural areas it may be expected that a large majority proportion preferred to avail government health services to those that services maintained by private practitioners on ground of financial problem. On the other hand, if such facilities and services provided by the government are not adequate even the rural poor may be forced to opt for medical check up in private clinic regardless of their meager financial position. Hence, preference of medical check up expressed by the people, be it the rural folk is considered another important measure for assessing the adequacy of the government health provision.

Table 5.7
Distribution of Sample Households by Preference for Medical Check up

Name of Village	Pvt. Doctor	Govt. Doctor	Total
Muallianpui	13.21 %	86.79 %	100
Buhchangphai	-	100 %	100
Hmawngbu	-	-	100
Thualthu	22.58 %	77.42 %	100
Sesawng	30.43 %	69.57 %	100

In all the selected villages, majority of the household respondents preferred government doctor to private doctor for medical check up. There were many respondents

in Muallianpui, Thualthu and Sesawng who preferred private doctor to government doctor for medical check up. It appears that proximity to urban areas, in both the cases of Sesawng and Thualthu villages, has enabled substantial proportion of the households to prefer private doctor to government doctor for medical check up. For respondents dwelling in a remotest village like Hmawngbu, it seems ridiculous to express their preference as they could hardly manage to go for medical check up even to the government health centres on grounds of financial problems and geographical isolation.

5: 5 Utilization Patterns at Village Level.

Utilization pattern of modern health-care facility at village level depends largely on factors like actual performances of the health personnel, type of facilities available, accessibility, health consciousness, general well being and nature of illness of the people. Intensity and nature of reported diseases and illness, nature of care delivery may provide a keener understanding of the pattern of health care utilization at the village level.

5.5.1 Intensity of Disease and Illness

The episodes of diseases occurrence among members of the family during one year preceding the survey in the sample households are recorded and clubbed together so as to give the intensity of diseases.

Intensity of diseases and illness i.e. the percentage of total number of persons reported ill to total sample population, calculated for the sample villages shows that the highest value is obtained from Thualthu village (33.10 %) situated along the NH-54. Situated in the malaria infested region the village Hmawngbu records the second highest

intensity, with the value 25.64 per cent followed by Buhchang (16 %), Sesawng (14.14 %) and Muallianpui (13.78 %) in that order.

Table 5.8
Sample Villages: Intensity of Diseases and Illness

Name of Village	Persons Reported ill	% to Total Sample Population
Muallianpui	58	13.70
Buhchangphai	36	16.00
Hmawngbu	51	24.64
Thualthu	54	33.10
Sesawng	69	14.14

5.5.2 Prevalence of Diseases

One understands the prevalence of diseases at the sample villages by ranking all the reported diseases and illness of the selected village in order of the relative importance of a single category over the total number of reported diseases of all kinds. The computed percentage value of diseases clearly reveals the relative importance of each category of diseases.

Table 5.9
Sample Villages: Top Five Ranking Diseases

Name of Village	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
Muallianpui	Malaria (22.41)	ADD (17.24)	ARI (12.06)	Fever (6.90)	T.B (3.45)
Buhchangphai	Malaria (38.89)	Jaundice (13.39)	ADD (8.33)	Fever (5.56)	ARI (2.77)
Hmawngbu	Malaria (74.50)	Fever (9.80)	ADD (1.96)	ARI (1.96)	T.B (1.96)
Thualthu	Malaria (51.85)	ARI (11.11)	Fever (9.26)	Gastro-ent. (5.56)	Sciatica (5.56)
Sesawng	ADD (37.68)	Malaria (13.04)	ARI (11.59)	Kidney (10.14)	Fever (8.70)

Figures in parentheses relate to cases in percent to all Reported Total Diseases

The village wise ranking of diseases (Table 5.9) shows that the occurrence and incidence of malaria is so striking that it has been ranked first in all the villages except,

Sesawng village. Even in Sesawng village malaria came next only to Acute Diarrhoea. Hmawngbu village situated a few kilometers away from the Indo-Bangladesh border exhibits excessively high incidence of malaria. Fever which is found ranking very high in all the villages may be taken as probable cases of malaria fever. Diseases related to food habits and sanitary conditions like Acute Diarrhoea, Jaundice and Acute respiratory problems ranked very high in all the villages. Acute Diarrhoea has been ranked one only in Sesawng village and unlike other village incidence of kidney problem is found alarmingly high.

Isolated cases of womb and urinary tract infection, pile problem, influenza, hepatitis, pneumonia and typhoid etc were also reported by the villagers. Problems related to blood pressure, nerve, chronic headache were also reported to have afflicted the general well being of some of the villagers. Cases of more or less permanent infirmities like deafness dumbness, blindness, polio, goitre and mental retardation were found afflicting very few persons.

5.5.3 Nature of Care Delivery

Reported cases of major disease and illness have been tabulated with reference to the nature of care delivered or treatment. Differentiation has also been made on gender line as diseases do not occur in similar magnitude for both the sexes. Whether the diseased person sought medical help from government health centre or not is considered an important parameter for assessing the level of health consciousness of the people on one hand, and the efficacy of the available health-care provision on the other.

Table 5.10
All Sample Villages: *Malarial Cases* Male Female Comparison

Village	Treated in Health Centre (% to Total Cases)			Not treated in Health Centre (% to Total Cases)			Grand Total
	Male	Female	Total	Male	Female	Total	
Muallianpui	15.38	0.00	15.38	69.23	15.38	84.62	100
Buhchangphai	14.29	14.29	28.58	50.00	21.42	71.42	100
Hmawngbu	2.63	2.63	5.26	65.79	28.95	94.74	100
Thualthu	39.29	10.71	50.00	39.29	10.71	50.00	100
Sesawng	33.33	0.00	33.33	55.56	11.11	66.67	100

The above table (5.10) shows that majority of the reported cases of malaria were not treated in health centre. In all the villages the number of patients who sought medical help from health centre is considerably very few. The percentage of malaria patient treated is the lowest in case of Hmawngbu village (V.3) where government health centre is not available in its close proximity. It is found in all villages that the percentage share of female patients is comparatively lower than their male counterparts. As has been stated earlier, male frequent outdoor exposure and different life styles may be cited as a satisfactory explanation for the apparent male selectivity of malaria.

Table 5.11
All Sample Villages: *Respiratory Diseases* Male Female Comparison

Village	Treated in Health Centre (Percentage to Total Cases)			Not treated in Health Centre (Percentage to Total Cases)			Grand Total
	Male	Female	Total	Male	Female	Total	
Muallianpui	0.00	0.00	0.00	71.43	28.57	100	100
Buhchangphai	0.00	0.00	0.00	100	0.00	100	100
Hmawngbu	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thualthu	16.67	50	66.67	0.00	33.33	33.33	100
Sesawng	12.5	0.00	12.50	50.00	37.50	87.50	100

Table 5.11 depicts that patients suffering from respiratory diseases visited health institution for treatment only in two villages, viz, Thualthu and Sesawng, both located in

a relatively more accessible region. Only in Thualthu village the percentage of females afflicted by this disease is higher when compared to the percentage for that of males.

Table 5.12
All Sample Villages: *ADD Including Gastro-enteritis* Male Female Comparison

Village	Treated in Health Centre (Percentage to Total Cases)			Not treated in Health Centre (Percentage to Total Cases)			Grand Total
	Male	Female	Total	Male	Female	Total	
Muallianpui	20.00	0.00	20.00	10.00	70.00	80.00	100
Buhchangphai	0.00	0.00	0.00	50.00	50.00	100	100
Hmawngbu	0.00	0.00	0.00	100	0.00	100	100
Thualthu	0.00	0.00	0.00	66.67	33.33	100	100
Sesawng	3.85	11.54	15.39	46.15	38.46	84.61	100

- It can be stated from table 5.12 that very few patients suffering from Acute Diarrhoel diseases go to health centre for treatment. Whereas Muallianpui village alone records a small proportion of ADD patients having been treated in the health centre, none of the patient who acquired ADD in the remaining four villages have gone to health centre for treatment during the last twelve months preceding the survey. Preponderance of any of the two sexes as regards the incidence of acute diarrhoel diseases is not visible.

Table 5.13
All Sample Villages: *Fever* Male Female Comparison

Village	Treated in Health Centre (Percentage to Total Cases)			Not treated in Health Centre (Percentage to Total Cases)			Total Cases
	Male	Female	Total	Male	Female	Total	
Muallianpui	0.00	33.33	33.33	33.33	33.33	66.67	100
Buhchangphai	0.00	0.00	0.00	100	0.00	100	100
Hmawngbu	0.00	0.00	0.00	0.00	0.00	0.00	100
Thualthu	0.00	0.00	0.00	80.00	20.00	100	100
Sesawng	28.57	14.29	42.86	28.57	28.57	57.14	100

Many of the reported cases of fever may further be regarded as probable cases of malaria fever as the incidence is found to be higher among males (table 5.13) except in Buhchang village, where sedentary agriculture substitutes the traditional jhum system. Male exposure to outdoor activities in jungle and jhum land seems to be responsible for the higher percentage share. The percentage of fever patients treated in health centre is comparatively lower than those untreated patients

Table 5.14
All Sample Villages: *Tuberculosis* Male Female Comparison

Village	Treated in Health Centre (Percentage to Total Cases)			Not treated in Health Centre (Percentage to Total Cases)			Grand Total
	Male	Female	Total	Male	Female	Total	
Muallianpui	0.00	33.33	33.33	33.33	33.33	66.67	100
Buhchangphai	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hmawngbu	0.00	0.00	0.00	100	0.00	100	100
Thualthu	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sesawng	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tuberculosis has been ranked fifth in the two comparatively isolated villages of Muallianpui and Hmawngbu. Two-third T.B patients in Muallianpui village were reported to have gone for treatment in health centres, none of the T.B patients in Hmawngbu, however, was reported to have sought medical help from the health centre during the last one year preceding the survey or so (Table 5.14).

Table 5.15
All Sample Villages: *Sciatica* Male Female Comparison

Village	Treated in Health Centre (Percentage to Total Cases)			Not treated in Health Centre (Percentage to Total Cases)			Grand Total
	Male	Female	Total	Male	Female	Total	
Muallianpui	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Buhchangphai	0.00	0.00	0.00	25.00	75.00	100	100
Hmawngbu	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thualthu	33.33	33.33	66.67	0.00	33.33	100	100
Sesawng	0.00	0.00	0.00	50.00	50.00	50.00	100

Sciatica is an ailment which affects the nerve of a patient usually at old age. This disease has been rank fifth in Thualthu village. This village alone records patient who received treatment from Govt. health institution during the last one year (Table 5.15)

Table 5.16
All Sample Villages: *Kidney Problem Male Female Comparison*

Village	Treated in Health Centre (% to Total Cases)			Not treated in Health Centre (% to Total Cases)			Grand Total
	Male	Female	Total	Male	Female	Total	
Muallianpui	0.00	0.00	0.00	100	0.00	100	100
Buhchangphai	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hmawngbu	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thualthu	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sesawng	0.00	25.00	25.00	62.50	12.50	100	100

Kidney problem is ranked fourth in the case of Sesawng village. The other village which reports kidney problem is Muallianpui village. The percentage of kidney problem treated in health centre during the last one year is very low even in Sesawng village (Table 5.16).

Few cases of Influenza, Pneumonia, Typhoid, Influenza, Pile Problems, High and Low blood pressure, etc are also reported in some of the sample villages. However, none of these diseases were treated in the health centre. The patients themselves pointed out that the health centres nearby could not satisfactorily give the required treatment.

Isolated cases of ailments like harpy, pile problems, Tonsillitis etc without being attended in health centres are also found among the family members of the sample households.

5.6 Maternal and Child Health Care Utilization

Under the umbrella of the RCH Programme started in Mizoram since mid 1998, various Maternal and Child Health Scheme have been implemented. The main

objectives of the Programme is to provide quality integrated and sustainable Primary Health Care services to women in reproductive age group and children (up to 5 years) and special focus on family planning and immunization. The RCH Phase I ended on 31st March 2004 concerned mostly with infrastructural development of rural health care.

It has been observed in the selected villages during field survey that Sub-Centres have been strengthened and provided with furniture, common medicines, vaccines etc related mainly to maternity and child health. Many villagers pointed out that the Sub-Centre in the village to them means a health centre means primarily for pregnant women! It is true that significant improvement in health care has been realized in the field of maternity and child health.

5.6.1 Antenatal Care / Check up

Antenatal Care (ANC) refers to pregnancy related health care provided by a doctor or a health worker in a medical facility or at home. The Safe Mother Initiative proclaims that all pregnant women must receive basic, professional antenatal care (Harrison, 1990). The reproductive and Child Health Programme recommends that as part of antenatal care, women receive two doses of tetanus toxoid vaccine, adequate amounts of iron and folic acid tablets or syrup to prevent and treat anemia, and at least three antenatal check ups that include blood pressure checks and other procedures to detect pregnancy complications (Ministry of Health and Family Welfare, 1997, 1998 b)¹⁰¹.

The households schedule asked women in the sample households who gave recent birth, i.e. since January 2001, 18 to 24 months preceding the survey, to say if they

¹⁰¹ NFHS-2, *op.cit.* p-222

had gone for ANC during pregnancy and if, yes how many times. Such responses have been grouped and tabulated as Table 5.17

. Table 5.17
All Sample Villages: Sample Households
Percentage Distribution of Mothers of the New Born by Antenatal Checkup

Question	Response	Muallianpui	Buhchangphai	Hmawngbu	Thualthu	Sesawng
Antenatal Check Up	Yes	100	100	-	100	100
	No	-	-	100	-	-
No. of ANC	1- 3 Times	16.67	33.33	0.00	83.33	25.00
	4-6 Times	83.33	55.56	0.00	16.67	50.00
	7-9 Times	0.00	11.11	0.00	0.00	25.00
Total		100	100	100	100	100
To Whom?	* Nurse	100	44.45	0.00	33.33	37.50
	Govt.Doctor	-	22.22	0.00	16.67	12.50
	Both	-	33.33	0.00	33.33	31.25
	Pvt. Doctor	0.00	0.00	0.00	16.67	18.75
Total		100	100	100	100	100
Tetanus injection	Given	100	100	-	100	100
	Not Given	-	-	100	100	100
Iron Frolic	Given	100	100		100	100
	Not Given	-	-	100	-	-

* Mid Wives included

Inferences can be drawn from the above table that women in reproductive age group are quite aware of the existing maternal care available in the health centre. Barring the village Hmawngbu, mothers of all the newborn in the sample households have had antenatal check up (ANC) at least once during pregnancy. However, none of the mothers in Hmawngbu had received ANC as the village has no health centre in close proximity. This may indicate that proximity to health centre is a prime factor generating health consciousness and subsequent utilization.

Majority of the newborn mothers in all the villages had no monthly ANC for all the nine months span pregnancy. Where as mothers having received ANC of 4 – 6 times formed the largest proportion in Mualliapui, Buhchangphai and Seawng villages, hence, satisfied the minimum number of ANC as recommended by the Reproductive and Child Health Programme. However, unlike the three villages mentioned above, newborn mothers with 1-3 ANC form the largest proportion in Thualthu Village.

Majority of the newborn mothers in the studied villages received ANC from nurse and mid-wife as they are the highest-level expertise manning the Sub-Centres. A large section of newborn mothers of relatively accessible villages like Buhchangphai, Thualthu and Sesawng reported that they have gone to Government doctors for ANC. Some new born mothers of Health and Sesawng have reported that they have gone to doctors in private clinic for delivery of ANC. It is to be noted that accessibility to health-care facility plays an important role as regards the nature and source of ANC.

All the newborn mothers in the four villages where maternal health-care can be availed said that during pregnancy they were given tetanus injection and Iron frolic tablet or syrup to prevent and treat anemia.

5.6.2 Assistance during Delivery

An important thrust of the Reproductive and Child health Programme is to encourage deliveries under proper hygienic conditions under the supervision of trained health professionals¹⁰²

¹⁰² NFHS -2 *ibid*, p-239

Table 5.18
All Sample Villages: Percentage Distribution by Nature of Delivery

Question	Response	Muallianpui	Buhchangphai	Hmawngbu	Thualthu	Sesawng
1. Place of Delivery	Home	91.67	77.78	100	100	43.75
	Institution	8.33	22.22	-	-	56.25
Total		100	100	100	100	100
2. Why the Mother did not go to Health Centre for delivery?	No need	100	57.14	55.56	14.28	28.57
	Better at Home	-	0.00	0.00	0.00	8.57
	Financial		28.57	0.00	85.72	0.00
	Quick Dely.	-	14.29	0.00	0.00	42.87
	Inaccessible	-	0.00	44.44	0.00	19.99
Total		100	100	100	100	100
3. Assisted by	Nurse	66.67	11.11	-	16.67	25.00
	Doctor	-	22.22	-	-	-
	Both	-	-	-	-	31.25
	DAI	25.00	55.55	-	83.33	25.00
	Relatives	8.33	22.22	100	-	18.75
Total		100	100	100	100	100

As evidenced by table 5.18 the proportion of home delivery assisted by untrained birth attendants and *Dai* is excessively high in almost all the villages. Sesawng village is the only village where institutional delivery exceeds that of home delivery. All new born mothers of the sample households of Thualthu and Hmawngbu villages gave birth at home.

It has been noticed that in a comparatively isolated village Hmawngbu which has no health centre, all the reported deliveries were assisted by untrained birth attendants. In contrast to this, the percentage of home delivery is very high in the case of Muallianpui, located in another comparatively isolated region however most of the reported deliveries have been assisted by nurse/health worker. It has been reported by

household respondents that health worker and nurse posted in the village extended their services even to care for home deliveries.

One wonders as to why all the newborn mothers in Thualthu, located along NH-54 gave birth at home being attended by *Dai* and untrained births attendance, even though they have cited financial problem as the main reason. In all the villages, it has been observed that mothers of the newborn who did not go to health centre for delivery do not feel the need of institutional delivery unless the pregnancy is of complicated case. It is true that many of the mothers did not go to health institution on ground of financial problem.

5.6.3 Child - Immunization

The vaccination of children against six serious but preventable diseases (tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis and measles) has been a cornerstone of the child health care system in India. As a part of the national Health Policy, the National Immunization Programme is being implemented on a priority basis. The Expanded Programme on Immunization (EPI) was initiated by the Government of India in 1978 with the objective of reducing morbidity, mortality, and disabilities from these six diseases by making free vaccination services easily available to all eligible children. The Universal Immunization Programme (UIP) has been introduced in every districts of the country and the target now is to achieve 100 percent immunization coverage. Pulse Polio Immunization Campaigns began in December 1995 as part of a major national effort to eliminate polio¹⁰³. In line with the National Immunization programme, Health and family Welfare Department in Mizoram, has taken up the

¹⁰³ NFHS-2, *ibid.* p-16

responsibility of implementing the programme since then. It is believed that village level investigation will provide an insight into the ground reality of the programme, its accessibility and utilization.

In all the selected village where Sub-Centre is available, all the new born babies received vaccine for immunization, such as BCG, DPT, Polio & Measles all in total or in part mostly from Sub-Centre (Table 5.19). It is disheartening to note that none of the new born in Hmawngbu is reported to have received immunization as the village has no such facilities within an easy reach of the villagers.

Table 5.19,
All Sample Villages: Percentage Distribution of New Born by Vaccination

Question	Response	Muallianpui	Buhchangpha	Hmawngbu	Thualthu	Sesawng
Vaccines	Received	100	100	-	100	100
	Not Received	-	-	100	100	100
Where from	Sub-Centre	100	88.89	-	100	100
	Hospital	-	11.11	-	-	-
Total Births		(12)	(9)	(18)	(6)	(16)

It can be concluded, therefore, that women in reproductive age group in the selected villages, where Health Sub-Centre is available, are quite aware of and have gained the benefit of maternal and childcare under RCH Programme. Availability of care plays significant role with regard to the place and nature of attendance of delivery. Unless the mother would give birth under complicated pregnancy many of the villagers do not feel the need of institutional delivery. Means of transport and communication do not play very significant role with regard to the nature of delivery of the new born, as opposed to the initial expectation.

5. 7. Health Consciousness by Lifestyles, Housing Characteristics

Habits, living conditions, housing characteristics together with response to the available health care facility etc of the sample population are taken as important indicators of the level of health consciousness of the people

5.7.1 Traditional Medicines

Before the advent of modern scientific medicines in the form of tablets, syrup, and injection, every tribe has some form of medicines that may be herbal, meat, tissue of animals etc. At many instances Modern Science has proved that many of the traditional medicines are scientifically acceptable and are as effective as modern medicines. Many of the Traditional Medicines however are proved unscientific and are attached with superstitions. Mizos are no exception to this rule. An antiquity unknown, Mizos Traditional medicines include both plant based as well as animal based in origin. To gain an insight into some of the Mizos traditional medicines we may quote A.G Mac CALL who records

“In some cases there was a distinct relationship between Lushai (Mizos) treatment and modern Pharmacology, as is evidenced by the use of jungle plants on wounds and sores... Salts were also used externally on burns. Hot Ginger, soda, and water were used for colds and stomach relief ... The bile of wild boar mixed with water served as one medicine... The fat of the hornbill was used for external application in the case of respiratory diseases... Massage with the application of the fats of the python, tiger, or bear was popular for rheumatism, as well as the wearing of the bones of a hooluk monkey over the aching joints. Drinking of the bile of python was used for diarrhoea or cholera cases. Many jungle creepers, lilies, or leaves, dried or powdered, were used as supplementary cures, either internally or externally”¹⁰⁴

The household scheduled asked about the attitude of the households respondents regarding the practice and use of traditional medicines in the family.

¹⁰⁴ Major A.G Mc Call (2003) *op.cit* Reprint. pp .178-179

Table 5.20
Percentage Distribution of Households by Use of Traditional Medicines

Name of Village	Use often	Never Use	Sometimes	Total
Muallianpui	7.41	79.63	12.96	100
Buhchangphai	9.68	35.48	54.84	100
Hmawngbu	0.00	51.72	48.28	100
Thualthu	27.27	9.09	63.64	100
Sesawng	0.00	44.44	55.56	100

The above table reveals that traditional medicines finds little place among the sample population. Only few households in the sample villages reported that they often used traditional medicines when members of the household get sick. In the village, Hmawngbu and Sesawng, none of the household in the village reported that they often used traditional medicines. If sample bias is not taken into account, it may be concluded that the practice of traditional medicines among Mizo's have been taken over by the use of modern scientific medicines.

5.7.2 Purification of Drinking Water

Table 5.21 indicates that Households that do purify water are most likely to use boiling as the method of purification.

Table 5.21
Percentage Distribution of Households by Purification of Drinking Water

Name of Village	Boiling	Filter	Both	Nothing	Total
Muallianpui	80.00	5.00	-	15.00	100
Buhchangphai	42.42	-	33.33	24.25	100
Hmawngbu	30.00	-	-	70.00	100
Thualthu	17.50	-	7.50	75.00	100
Sesawng	66.67	3.33	10.00	20.00	100

The use of only filter is reported only in Muallianpui and Seawng villages while the combination of both filter and boiling as a means to purify water is reported by a low proportion of the households in the village Buhchangphai, Sesawng and Thualthu.

Majority of the Households in Thualthu and Hmawngbu do not purify water prior to drinking. In Sesawng and Muallianapui the percentage of households that practiced purification is comparatively much higher. However, in both the village Acute Diarrhoeal diseases is ranked very high (see table 5.9) i.e. ranked one and two respectively.

5.7.3 Type of Salt and Oil Use for Cooking

Iodine deficiency disorders (IDD) are a significant public health problem in India. It is estimated that 150 million people in the country are afflicted with IDD, In addition goitre and cretinism, IDD is link to neurological defects, stunt growth, still births, and reproductive failure.¹⁰⁵

Table 5.22
Percentage Distribution of Households by Type of Salt use for Cooking

Name of Village	Iodine	Coarse	Both	Total
Muallianpui	58.18	41.82	0.00	100
Buhchangphai	52.50	22.50	25.00	100
Hmawngbu	2.50	97.50	0.00	100
Thualthu	92.50	7.50	0.00	100
Sesawng	65.00	30.00	5.00	100

The addition of iodine to every day item of one's diet appears to be the most effective way of combating the deficiency according to Goiter expert from AIIMS.¹⁰⁶

¹⁰⁵ IRDC Archive, [http:// www.irdc.ca/en/ev](http://www.irdc.ca/en/ev) , Internet, Date of download 5/9/05

¹⁰⁶ Darryl D'Monte, [http:// www.indiatogether.org/2005/aug/govt- saltban/htm](http://www.indiatogether.org/2005/aug/govt-saltban/htm)., Internet, Date of download 5/9/05

In this backdrop, the government of India has decided to reintroduce ban on non-iodized salt and continues to encourage people to use only iodized salt for cooking.

The above table presents the percentage distribution of households by type of salts for cooking. The proportion of households using Iodized Salt for cooking is much higher when compared to households using coarse salt in all the villages excepting Hmawngbu village. This is an indication that even in the villages of Mizoram people began to realize the advantage of using iodized salt over ordinary salt. However, in many households iodine salt and coarse salt are used in combination.

It has been reported that all the sample households of the studied villages used ordinary mustard oil for cooking.

5.7.4 Habits / Lifestyles

The household schedule asked the respondents about the lifestyles of household members particularly that of habits detrimental to health, such as, chewing pan and tobacco, smoke and alcohol. These lifestyles indicators are of considerable interest because the use of pan masala, tobacco and alcohol can have detrimental effect on health. In addition, to the extent that social stigma may be attached to the use of some of the substances, underreporting is likely.¹⁰⁷

Table 5.23
All Sample Villages: Percentage Distribution of Sample Population by Habits

Name of Village	Smoking/Chewing Tobacco/Pan	Alcohol
Muallianpui	29.95 %	4.00 %
Buhchangphai	45.09 %	0.00 %
Hmawngbu	39.6 %	6.76 %
Thualthu	61.03 %	7.97 %
Sesawng	30.77 %	0.00 %

¹⁰⁷ NFHS -2 *op.cit.*

Habits such as chewing pan or tobacco, and smoking that are detrimental to health are very common among members of the sample households. It is rare to find households where none of the members practiced any of the habits. In every selected village at least one-third of the sample population acquired these habits (5.23). The proportion of people who chew pan or tobacco/smoke ranges from 29.95 percent in Muallianpui village to 61.03 percent Thualthu village. However, the use of alcohol is not common among the members of the sample households as very few proportion of the people are reported to have had the habits or due to social stigma attached to the use of alcohol underreporting has distorted the finding. Buhchang and Sesawng village both has nil report while a very small section of people in the remaining villages are reported to use alcohol.

5.7.5 Toilet Facility

Types of toilet facility reflect the general level of health consciousness and standard of living. It is true that many communicable diseases quickly spread among the community due to the practice of open defecation.

Table 5.24
Percentage Distribution of Households by Toilet Facility

Name of Village	Flush	Pit	Open Defecation	Total
Muallianpui	3.33	96.67	0.00	100
Buhchangphai	12.50	87.50	0.00	100
Hmawngbu	0.00	97.50	2.50	100
Thualthu	50.00	47.50	2.50	100
Sesawng	32.86	67.14	0.00	100

It can be inferred from table 5: 24 that the practice of open defecation is not common among people of Mizoram. Very few households in Hmawngbu and Thualthu

villages still practiced the activity but for the people of the remaining three villages it has become a thing of the past. Most of the households in every selected village have separate pit latrine. The percentage of households having more sophisticated toilet facility of flush latrine is quite significant in Thualthu and Seawng villages, both located few kilometers away from urban center and NH-54.

5.7.6 Housing Characteristic - Arrangement of Room

Housing characteristics particularly arrangement of room is of interest because it affects health as well as the general quality of life.

Table 5.25
Percentage Distribution of Households by Separate Room for Cooking

Name of Village	Have	Have not	Total
Muallianpui	23.33	76.67	100
Buhchangphai	40.00	60.00	100
Hmawngbu	32.50	67.50	100
Thualthu	25.50	75.50	100
Sesawng	31.43	68.57	100

Table 5.25 reveals that the percentage of households having separate room for cooking is substantially low in the entire sample villages. Buhchangphai village, situated in one of the low-lying flats land in the state has the highest proportion of households having separate room for cooking.

The following conclusions can be drawn from the above analysis of the various health consciousness indicators, traditional medicines have been discarded by a very large section of the sample population. A very large proportion of villagers have realized the necessity of purification of water prior to drinking. Iodine salt which was introduced as a means to combat Iodine deficiency disorder has found wide acceptance among

majority households of the studied villages. Habits like chewing tobacco/pan, cigarette smoking is very common among the rural folks. The practice of open defecation has been completely abandoned by almost all the sample households, very few households without separate toilet facility have reported that they also share with their next door households which have the facility. It is gratifying to note that more sophisticated facility like flush toilet has been introduced even to some households located in isolated rural areas.

5. 8 Utilization of Govt. Health Care Facility - Spot Investigation

Health Institutions' records pertaining to morbidity data is often restricted to age sex and nature of illness and rarely includes occupation, literacy level and economic background of those who utilized these services. As such, information is collected from one hundred outpatients awaiting medical checkup in OPD (Out Patient Department) Civil Hospital Aizawl, (the biggest and best equipped Government runs hospital in the state, situated in the hearth of the city) in the form of short structured questionnaire (Appendix-XV). Patients are randomly chosen and the survey covered about half the patients sitting in the common out patients waiting shed. The main purpose of which was to assess which section of the population utilizes this facility the most, the distance covered on the way to medical check up, nature of illness, literacy level and economic background of those who utilize the services. It is expected that, the survey though very small in its population coverage, will throw light on certain aspects of those who utilize the government health facilities in urban areas and may complement the pattern already observed at the village level as regards the delivery of health facility.

5.8.1 Distance Covered and Nature of Diseases

The nature of illness and the distance covered by patients on the way to availing of medical check up is considered an important index of assessing the level of health services in the destined health centre or hospital. To some extent, this may also reveal the level of health facility available in the patients' place of origin.

It is evident from table 5.26, a large majority of patients, i.e. 87 out of the sample hundred patients reside within Aizawl city and the distance covered on their way to medical check up is less than 10 km. The purpose for which they visit the hospital range from ailments such as, eye check up, tooth removal, tooth problem, fever, peptic ulcer, skin diseases, Antenatal Check up, urinary tract infection, womb, skin diseases etc. The number of patients who traversed 10 – 20 kilometers distance for medical check up is very few and the nature of their illness relates to hearth problem and skin disease.

Table 5.26
Aizawl Civil Hospital OPD: Patients by Distance Covered

Distance in Kilometres	Number of Patients
Below 10	87
10 – 20	3
50 Above	10
Total	100

Patients who traveled a distance of more than 50 kilometres for medical check up comprised of 10 out of the hundred. The nature of illness of this category ranges from critical ailments to minor disease. Patients from a little beyond 50 Km includes ailments such as; decaying teeth, skin disease, urinary tract and eye problem. However, among the hundred patients covered by the survey, as many as four patients cross a distance of more than 200 Km to avail medical check up in this hospital. Two patients with more

critical ailments viz, urinary tract problem and tumor reported that they reside in Lunglei town, the Second Capital of the state. The remaining two patients whom reported to have traversed more than 150 Km include cases of peptic ulcer and maternity related problem, one belong to Champhai Town, i.e. the third largest settlement in Mizoram, and the other one from a small village near Champhai town.

The survey therefore reveals that majority of the patients who utilized health services in Aizawl Civil Hospital reside within the city and nearby villages, whereas patients from relatively far off places and other urban areas largely composed of patients with more critical illness.

5.8.2 Patient by Age and Nature of Illness

The morbidity data collected from the survey has been tabulated as Table 5.27

Table 5.27
Aizawl Civil Hospital OPD: Patients by Age Group & Nature of Illness

Illness	Age Sex	< 14		15 - 40		41- 50		50 <		Total
		M	F	M	F	M	F	M	F	
Tooth		9	8	5	7	1	1	1	3	35
Eye		3	6	4	12	2	3	1	2	33
Fever		-	2	2	3	1	1	-	-	9
Peptic Ulcer		-	-	2	3	-	-	-	-	5
Skin Disease		-	-	1	3	-	-	-	1	5
Womb		-	-	-	2	-	1	-	-	3
Urinary Tract		-	-	-	2	-	-	-	-	2
Tonsillitis		1	1	-	-	-	-	-	-	2
ANC		-	-	-	2	-	-	-	-	2
Rheumatoid		-	-	1	-	-	-	-	-	1
Tumor		-	-	-	1	-	-	-	-	1
Hearth		1	-	-	-	-	-	-	-	1
Appendix		-	-	-	1	-	-	-	-	1
Total		14	17	15	36	5	5	2	6	100

It can be observed from the table that a large majority of patients who utilized OPD service in the hospital relate to patients having tooth and eye problems. Patients

with tooth problems are found in all the age groups. The proportion of which is the highest in the age group below 14, as majority belongs to tender age group and visit the hospital to remove their milk teeth. However, decay and sensitivity forms the major tooth problem in the remaining age group.

The highest proportion of cases with eye problem is found in the age group 15–40, followed by the age group below 14. It is interesting to note that the number of female with eye problem exceeds that of male in all the specified age groups. Cases of fever ranked third and patient with reported fever are found in all the age group barring the age group above 60. Majority cases of skin problem and peptic ulcer are reported by patients belonging to the age group 15 – 40. Specific disease such as womb, urinary tract, tonsillitis, rheumatoid, appendix problem, tumor, hearth etc forms the nature of illness of those who utilize services in the hospital with a lower degree.

5.8.3 Source of Medical Check up

The survey scheduled asked the sample patients to say whether he/she used to go to private clinic for medical check up or not at all. The responses have been tabulated and correlated with income level as Table 5.28.

The table below indicates the proportion of patients who said they often visit private clinic for medical check up is significantly higher than those who said they never visit private clinic. Patients whom report he/she used to visit private clinic is recorded in all the specified income level. Only in the lowest income level below 1,000 that the proportion of patients saying he/she never visits private clinic (71.43%) is higher than those who said they often visit (28.57%).

Table 5.28
Aizawl Civil Hospital OPD: Medical Check up by Income Level

Family Monthly Income	Never go to Private Clinic	Often go to Private Clinic
Below 1,000	5 (71.43)	2 (28.57)
1,000 – 5,000	20 (41.67)	28 (58.33)
5,000 – 10,000	7 (23.33)	23 (76.67)
10,000 – 20,000	2 (16.67)	10 (83.33)
Above 20,000	1 (33.33)	2 (66.67)
Total	35	65

Figures in parentheses are in percentage to Total of each category.

The proportion of patients who said they also visit private clinic frequently is increasing with the increase in income level till the income level 10,000 – 20,000 category. Moreover, the number of patients falling in the income level above 20,000 is very few among the sample patients who visited OPD of the hospital. The distribution of patients by income level and main source of health care reveal that majority of the patients who utilized OPD Services in Aizawl Civil Hospital relates to family income level of medium to low. The proportion of patients who said they often visit private clinics are those with higher income level.

5.8.4 Literacy Levels of Patients

The literacy level of patients visiting the Hospital OPD ranges from illiterate to Graduate and Post Graduate (Table 5.29).

Table 5.29
Aizawl Civil Hospital OPD: Patients by Literacy Level

Education	Male	Female	Total
Illiterate	2	2	4
Primary	11	8	19
Middle	17	15	32
H.SLC & HSSLC	10	24	34
Graduate & PG	5	6	11
Total	45	55	100

Patients with education level HSLC and HSSLC formed the largest proportion followed by middle level. Educational level of primary shared the third largest proportion and is closely followed by Graduate to Post Graduate level of education. The illiterate however forms the lowest proportion of patients utilizing the service.

The following inferences can be drawn from the analysis of information collected from patients visiting Aizawl Civil hospital OPD;

Majority of patients who utilized health services in Aizawl Civil Hospital reside within the city and near by villages, where as patients from relatively far off places and other urban areas largely composed of patients with more critical illness. The highest proportion of cases with eye problem is found in the age group 15– 40, followed by the age group below 14. It is interesting to note that the number of female with eye problems exceeds that of male in all the specified age group.

The proportion of patients who said they also visit private clinic frequently is increasing with the increase in income level. High to very high-income group hardly utilized OPD Services in the hospital.

The literacy levels of patients utilizing health care services in the Hospital OPD ranges from illiterate to as high as Post -Graduate level of education.

5.9 Concluding Statement

In the first half of this chapter an attempt has been made to assess the level of utilization of existing health care facility at the household level of the five selected villages. The analysis leads to the following broad generalizations.

Response to government runs health care services in rural area through Sub-Centre is not very impressive. Even though literacy seems to play significant role in generating health consciousness of among the sample population, what is more important as regards utilization of health care facilities appears to be accessibility represented by geographical distance and availability of better facilities. In all the five selected villages, the proportion of patients who seek medical care from health centre is fairly low for all the category of diseases due mainly to poor facilities and infrastructure; significantly so in the village like Hmawngbu which has no health centre but situated far off from health centres of any type with a comparatively low literacy rate of 50 percent. Household respondents in Hmawngbu village reported that they never go for medical check up except for cases of most critical illness. Moreover, none of the newborn mother had gone for ANC during pregnancy and none of the newborn was reported fully immunized, largely due to distance and financial problem to avail such services in the health centres. By contrast, the remaining four studied villages has a sub-centre each within the village and it has been reported that all the new born mothers in this villages had gone for at least one ANC during pregnancy, irrespective of literacy levels, and all the new born were reported partly or fully immunized.

Health care services in Sub-Centre level from close examination emerged as Maternity and Child health oriented. Majority of the people who utilized the service were women in reproductive age group for ANC and vaccination of the new born.

Levels of health consciousness of the rural people are largely affected by availability of the health services within their reach. If health centres are located

judiciously with due consideration of population coverage and the distance variable, responses to such facilities are likely to be quite impressive.

Nearness to urban centre has a positive relationship to the health consciousness level of the rural people is clearly brought out by the fact that among the five studied villages, those located closer to urban centres recorded a relatively higher proportion of patients being treated in the health centres when one scrutinized the episodes of diseases during the last one year preceding the survey.

Geographical location, situation and economic condition of the people play significant role in affecting utilization of health services at the village level. Habits such as chewing pan or tobacco, and smoking that are detrimental to health are very common among members of the sample households. It is rare to find households where none of the members practiced any of the habits.

A very large proportion of villagers have realized the necessity of purification of water prior to drinking. Iodine salt which was introduced as a means to combat Iodine deficiency disorder has found wide acceptance among majority households of the studied villages.

The practice of open defecation has been completely abandoned by almost all the sample households; in its place more sophisticated facility like flush toilet has been introduced even to the households located in rural areas. The percentage of households having more sophisticated toilet facility of flush latrine is quite significant in Thualthu and Seawng villages, both of which located few kilometers away from urban center and NH-54.

The second section of this chapter led to the following broad generalizations; the proportion of patients who used to visit private clinic alongside government health centre increases with the increase in income level. High to Very high-income group hardly utilized OPD Services in the government hospitals.

The literacy levels of patients utilizing health care services in the Hospital OPD services range from illiterate to those that attained Graduate to Post -Graduate levels of education.

CHAPTER – VI

SUMMARY OF CONCLUSIONS

6.1 Mizoram, an isolated hilly state in the North-eastern corner of India, epitomizes striking unique conditions wherein the rapid development in social sphere is not much in keeping with the development in economic sphere. It is true that the dissected hilly condition, geographical isolation and poor natural resource endowment imposed severe restrictions to the establishment of profit making industries. The terrain condition too is not conducive to the development of large scale agri-business. As such, among the states of India, Mizoram is one of the most economically backward states. Conversely, social indicators such as, literacy rate and urbanization placed the state amongst the most better off states in the country. This contradiction notwithstanding, the present problem assumes nuances of meanings as far as the health care provision and its utilization is concerned.

Given the inherent economic backwardness which apparently stifles changes; either socially or economically, one wonders as to how the pace of development in social sector could be very rapid in this isolated hilly region. One would never arrive at any satisfactory explanation for such contradictory situation without reference to the various events that the region had experienced in the historic past, which however is reflected in each and every sphere of the social life and attitudes of the people. Contact with Europeans and the introduction of education as a means of religious instruction since the late 19th Century paved the way for a rapid transformation of Mizo society from its exclusive tribal way of living to the more modern living styles.

Until the advent of the British, the Mizo had no written language; hitherto unwritten Lushai language was reduced to writing since barely a hundred and ten years ago in 1895 by a pioneer Missionary. The Mizos' receptivity to the newly introduced formal education was quite remarkable; Mizoram's high literacy rate today may be cited as the direct outcome. While economic backwardness has been a stifling force for the people of this region, the continuation of tribal values, ethnic homogeneity and above all the ingenuity of the Mizo people have all been responsible for quick diffusion of whatever social or economic changes take place. In matters of socio-economic changes and diffusion, both social and spatial, one hardly notices the kind of structural impediments that characterize the people of many other regions of India where social change is confined to a few people leaving many others deprived, even ignorant of the changes. Every change, be it social, economic or technological, leaves the underprivileged even more underprivileged, the poor even more marginalized. Fortunately, Mizoram stands out as a rare exception to this rule.

Another striking uniqueness that characterized the state was during the period 1966 to 1986 when the Mizo National Front (MNF) led insurgent activity plunged this isolated region under serious turbulence for about three decades, disrupting the process of economic development that was taking place during that period. The relative isolation of the state in terms of geographical location and continuation of the government policy maintaining the state as part of restricted area both had limited any possible large scale immigration to have taken place from outside the state. This situation by and large

enabled the Mizo's to maintain a rather monolithic social structure within this isolated hilly state.

6.2 At this backdrop, the broad objectives of the present research were to analyze geographical patterns in the availability of health care delivery in Mizoram in its spatio-temporal context; to assess the level of utilization of health care facility in different regions in Mizoram; and to explain regional imbalances if any, in the availability and utilization of health care facility.

The study assumes greater significance in light of the recent reawakening that health is a fundamental right and a world wide social goal. In terms of resource for socio-economic development, nothing can be considered of higher significance than the health of the people. The wide inequalities in the provision of health care facilities throw a challenge to social scientists, including geographers to utilize their respective approaches in the solution of problems pertaining to equity.

Given the context and the broad objectives of the research, following research questions were placed for obtaining an adequate answer: (a) is the available health facility adequate by national and regional standards, keeping in view the topographical constraints and the distribution of settlements in Mizoram? (b) whether response to the available health care facility is spatially uniform in its utilization level or is differentiated on account of institutional constraints? (c) Whether achievements in the field of literacy and urbanization get translated into a consciousness in availing of health facility or such achievements are independent of each other?

6.3 The study made use of data available from secondary sources. Efforts were made also to collect primary data at selected villages. Data published by successive Census of India, with regard to population density, rural urban population, settlement distribution and size, availability and accessibility of health facility; Handbook and Annual report, Morbidity and Health care related data published and maintained at Directorate of Health Services, Health and Family Welfare Department Mizoram; Hospitals/Community Health Centres/ Primary Health Centres/ Subsidiary Health Centre Sub-Centres etc, records regarding facilities available and utilization of such facilities; morbidity data maintained at the Epidemiology Cell, Directorate of Health Services Mizoram, District CMO office Aizawl West, Aizawl East, Lunglei, Lawngtlai and Saiha; Malaria Eradication Programme (NVBDP) section Mizoram; Registrar of Deaths and Births, Directorate of Economic & Statistics, Mizoram, records regarding causes of deaths constituted the main secondary sources of information which were cautiously but profitably utilized to arrive at the conclusions. Mention must however be made of the notoriously incomplete, inaccurate and unreliable nature of hospital records on disease related data which posed itself as a serious constraint if not a total impediment to arrive at meaningful conclusions. The analysis of the data based completely on secondary sources of data hence have to be read with caution, though in spite of the limitation, they did provide the only source for a macro understanding of the spatial patterns. The limitation of the secondary sources of data necessitated collection of data at the field level.

Primary data have been procured through questionnaire and interview of sample households located in rural areas in different eco-regions of Mizoram to elicit information on the patterns of utilization of modern health care facility and causes of their acceptability/non-accessibility of the available health facility. The studied villages have been chosen in such away as to represent villages located near urban centres and villages located comparatively far off from the urban centres. Purposive random sampling methods were used to select the villages while the households were selected on a random basis. The field work was discontinuous and was completed in a period of 18 months beginning with the winter of 2002.

6.4 Since the study primarily aimed at evaluating the availability and utilization of health care facility in Mizoram in a geographical framework, the following methodology was used for conducting this research.

Attempt was made to assess the geographical patterning of the available health facilities in terms of location of such facilities at different levels of spatial aggregation such as the districts, and the Rural Development Blocks in order to examine spatial inequality, if any, in the provision of health care facility. The inequality factor was further probed by extending the analysis to accessibility constraint as represented by distance and terrain conditions as well as facilities such as road communication. Villages were classified into different categories in relation to physical accessibility to centres of health care facility.

The case of utilization of such facility was examined by a reference to health centres records for a period of one year divided into seasons. The seasonal variations in

utilization are considered important as the climatic conditions often impose severe restrictions to the mobility of the people.

As information collected from the health centres are often restricted to age and sex and rarely include occupation, literacy level and economic background of those who utilized these services, information were gathered from a hundred outpatients awaiting medical checkup in Civil hospital Aizawl (the largest and the best equipped Government runs hospital in the state), Out Patient Department (OPD), in the form of short structured questionnaire. The main purpose of this survey was to assess which section of the population utilized this facility. The distance covered, nature of illness, the literacy level and economic background of those who utilize these services were analyzed.

Morbidity data collected from health offices for major diseases were analysed in order to evaluate the efficacy of the available health care delivery system. In the absence of data for the lower aggregate levels except for malaria, six principal communicable diseases were mapped taking the districts as the lowest spatial unit and analyzed with an accent on temporal dimension.

The data collected from sample households located in five selected villages and the data procured from one hundred out-patients awaiting medical check up in Aizawl Civil Hospital OPD were analyzed to assess the availability and utilization of health care facility. Special emphasis was laid on gender, occupational and literacy background of the persons while scrutinizing their utilization of health care facility.

6.5 The manuscript of this thesis is organised into six broad chapters. The first chapter includes the design of research containing statement of the problem, definition and concepts, broad objectives, a brief note on the selection of the study area, basic research questions, data base and methodology and a detail review of researches on the field.

Chapter II provided a brief historical account of the growth and diffusion of modern health care facilities since its inception in the state. The chapter emphasises on the temporal dimension. While highlighting the introduction of modern health care in the State, distinction was made between the role of the Missionaries and the British Indian Administration. Part of the attempt was to reflect how society's attitude towards health and health care changed over time. This chapter included an overview of the various health programmes implemented in the state.

The third Chapter analysed spatial inequalities in the provision of modern health care facility at different levels of spatial aggregation. Emphasis was laid on the pattern at the village level. Chapter IV made an attempt to understand regional patterns in the prevalence of major communicable diseases with an accent on temporal dimension at the aggregate level. A section of this chapter was devoted to discuss the most dramatic vector borne disease Malaria. In order to examine the efficacy of the available health care provision, morbidity and mortality data were correlated with the existing facility.

The fifth chapter analysed data collected at the village and household level to find explanation of the level of utilization of the existing health care facility and constraints in utilizing such facilities. The last chapter provides a summary of

conclusions and an attempt has been made to give suggestions regarding health care delivery system based on the research findings.

6.6 With regard to the growth and diffusion of modern health care facilities in the state the following broad conclusions were drawn.

It was the British occupation and the advent of Christian missionaries which marked the beginning of modern health care facility in the state. Introduction of western education and health care completely broke down the Mizos traditional understanding of the causes of diseases and ailments which formerly was interwoven with their animistic world view. Two different agencies, namely, British Indian Administration (the Government) and the Christian Missionaries were the precursor of health care facilities in the state. The contribution of the Missionaries in the field of both curative and preventive health care services in Mizoram was quite commendable. They were the ones who initially provided training in nursing and midwifery to the Mizos. It was the Missionaries who made concerted efforts to educate the general public on sanitation and hygiene through lectures and campaign.

Growth and modernization of health services took a new turn with the end of insurgency under the State Government in the form of infrastructural and Human Resource Development, availability of qualified persons in different discipline of specialties, up to date appliances for treatment and diagnosis of various diseases. Under the aegis of the Missionaries, particularly of the Welsh Mission, care has been taken so as to cover the entire regions lying under their jurisdiction in Mizoram. As such, apart from maintaining hospital at Durtlang, Aizawl, they have established health centres at

four diverse distant villages, each about four to six days journey on foot from Aizawl, to cater to the needs of maximum number of people. Conversely, the growth and diffusion of modern health centres under the government shows a rather striking imbalance in the regional patterning of such centres. In recent decades private firms too have begun to make investment in the field of health care. It is expected that such facilities run by private sectors would in future make greater inroads into this state as the social environment and needs by and large is conducive to the development of better health care services.

Quantitative growth and modernization of health care facilities at the state level do not necessarily lead to better utilization at the lower aggregate level, when factors like accessibility and spatial distribution are taken into consideration.

1.7 The study of spatial patterns in available health care delivery system in Mizoram led to the following broad generalization.

Inter-district variation in the availability of health care facility in the state is found to be minimal. The districts which are better off in quantitative terms of available health care facility are not necessarily the district that are better served, when actual delivery potential is measured by Health facility and population ratio. Urbanization seems to be associated with better availability of health care provision both at the district and block level. However, a close scrutiny at the village level data shows that many villages located near large urban centres are usually left un-served as far as the general absence of medical amenity within the village is concerned. This is an indication of the fact that urban centres are well endowed with health institution at the expense of the

nearby rural settlements. Inter-block variation in health care facility reveals that highest disparity in terms of health care provision is recorded either by the blocks that are peripheral in their location or the blocks which contain entirely of rural population with the exception of few blocks.

The blocks lying in the eastern higher altitudinal zones of the state generally exhibit higher proportion of their villages served by health facilities. The lowest proportion of villages served by medical facilities is found to be located mainly in the western and southern most part of the state. While urban centres are relatively well served, many of the nearby villages are left un-served even by Community Health Worker. It is not clear if such a situation is indeed a policy implication that villages close to urban centres need not be provided with better health care facility as people can avail the facility located in the nearby urban area.

There are glaring instances of inequalities in the geographical patterning of the location of health centres at the villages of the blocks. It has been found that while a group of clustered villages do not have even a health centre, villages of the same size close to each other are found each having a health centre. Constraints associated with distance from the nearest health centres are relatively higher for those villages located in the western lower altitudinal zone of the state close to Bangladesh border than rest of the villages located elsewhere in the state.

Comparison of villages of the various developmental block located in different altitudinal zones of the state also revealed certain interesting patterns, that villages of the blocks that are located in the eastern higher altitudinal zone of the mountainous region

of the state and those located in the middle section of the parallel ridges are comparatively better served when compared to villages of those blocks that are located in the low altitudinal zone of the western most part of the ridge and valley region, as far as the accessibility and availability of health care facility is concerned. It should be noted however that quite a few blocks exhibit a deviation from this general pattern.

Blocks that contain urban centres do not necessarily record better served situation as far as the accessibility by geographical distance and availability of health care facility at village level is concerned, for instance, among the blocks that are located in the high altitudinal zone of the east, the two blocks that contained entirely of rural population, namely, Ngopa(Champhai district, formerly part of undivided Aizawl district) and Sangau (Saiha district, formerly part of Chhimtuipui district), both excelled their counterparts blocks that contain urban centres, when proportion of villages having health centres and the aspect of accessibility represented by distance variable is taken into consideration. However, among those villages located in a comparatively low altitudinal zone of the state, the block that contain urban centres registered a situation better than those blocks containing population of entirely rural. On the other hand, among those blocks located in part of the middle ridges, the most urbanized blocks Tlangnuam and Lunglei do not record any better situation than the blocks that contain population entirely of rural like Aibawk block (Aizawl district). It may also be observed, among the blocks that are located in the middle ridges Tlangnuam block which contain the most urbanized settlement in the state, namely, Aizawl records the largest proportion of villages lying beyond 10 Kilometres from the nearest health centres

1.8 With regard to the prevalence pattern of various diseases in Mizoram the following conclusions were drawn.

Among Principle communicable diseases, Acute Respiratory Infection and Acute Diarrhoeal Diseases, occurrence of which is related to the living environment, habits and sanitation are found to be most dramatic as far as the incidence rates are concerned. Apparently less dramatic diseases like Pulmonary Tuberculosis, Viral Hepatitis and Pneumonia record very high mortality rates per thousand patients. It is observed from the trend of annual morbidity and mortality data at the state level that the existing health provision is not successful enough in so far as the improvement made in curbing or preventing the occurrence of these diseases are concerned.

Malaria, unlike most principal communicable diseases that have been around this region from time immemorial, has not declined significantly throughout the state. In an area fraught with hovering mosquitoes, in spite of all the strenuous effort on part of the government to reduced malaria incidence, it continues to remain the major health problem of a large section of the population particularly of those living in rural environment. For those areas affected by the disease, the economic impact is enormous, not to speak of chronically infected families, each time a person gets the disease, he/or she is bound to miss 5-20 days of work.

Significant variation in the occurrence of malaria in different parts of the state is observed. It was observed that malaria hyper-endemic belt broadly corresponds to the area lying close to Indo-Bangladesh border in the west and areas close to Assam border in the low altitude North West part of the state. The relative dominance of *P. falciparum*

and *P. vivax* strain of malaria parasite in relation to altitude in Mizoram is found to be just the reverse of the situation in Meghalaya and Madhya Pradesh. In these two states the *P. falciparum* usually dominates lower altitudinal zone but in Mizoram preponderance of *P.falciparum* in a relatively higher altitudinal zone, i.e. eastern higher altitudinal region of the state is noticeable. This signifies the high adaptability of the *P.falciparum* parasites inside the vector Female Anopheles Mosquito.

Whereas the six selected communicable diseases statistically emerged as female selective, the occurrence of malaria is found to be higher among males in the study area.

In course of the analysis of mortality and morbidity patterns of the study area it was observed that recently the percentage share of communicable diseases to the total diseases has declined significantly, indicating that there has been a substantial increase in the incidence of non-communicable diseases such as hypertension, diabetes, cancer, road accidents, alcohol and drugs abuse in this state. One reason for this appears to be changes in lifestyles and growing stress of modern social life. One may hope that the relative dominance of communicable diseases over other diseases will soon assume a continuous declining trend in the next few years switching over to the pattern facing more advanced societies, largely because morbidity seems to have been dominated by diseases other than communicable

Urban centres as the foci of health services and high literacy rates seem to generate better consciousness of health care among the people as reported cases of diseases tend to be higher in the districts which have large urban centres. Better facilities means better utilization is clearly brought out by the spatial pattern of incidence of

various diseases that those areas which have both higher quality and quantity of health facilities like Aizawl, Lunglei, Kolasib districts usually record comparatively higher rate of diseases incidence.

1.9 Field investigation undertaken in five villages located in diverse altitudinal zone and Civil Hospital Aizawl led to the following broad conclusions.

Response to government run health care services in rural areas through Sub-Centre is not very impressive. Even though literacy seems to play significant role in generating health consciousness of among the sample population, what is more important as regards utilization of health care facilities appears to be accessibility represented by geographical distance and availability of better facilities. In all the five selected villages, the proportion of patients who seek medical care from health centre is fairly low for all the category of diseases due mainly to poor facilities and infrastructure; significantly so in the village like Hmawngbu which has no health centre but situated far off from health centres of any type with a comparatively low literacy rate of 50 percent. Household respondents in Hmawngbu village reported that they never go for medical check up except for cases of most critical illness. Moreover, none of the newborn mother had gone for ANC during pregnancy and none of the newborn was reported fully immunized, largely due to distance and financial problem to avail such services in the health centres. By contrast, the remaining four studied villages has a sub-centre each within the village and it has been reported that all the new born mothers in this villages had gone for at least one ANC during pregnancy, irrespective of literacy levels, and all the new born were reported partly or fully immunized.

Health care services in Sub-Centre level from close examination emerged as Maternity and Child health oriented. Majority of the people who utilized the service were women in reproductive age group for ANC and vaccination of the new born. Levels of health consciousness of the rural people are largely affected by availability of the health services within their reach. If health centres are located judiciously with due consideration of population coverage and the distance variable, responses to such facilities are likely to be quite impressive.

Nearness to urban centre has a positive relationship to the health consciousness level of the rural people is clearly brought out by the fact that among the five studied villages, those located closer to urban centres recorded a relatively higher proportion of patients being treated in the health centres when one scrutinized the episodes of diseases during the last one year preceding the survey. Geographical location, situation and economic condition of the people play significant role in affecting utilization of health services at the village level. Habits such as chewing pan or tobacco, and smoking that are detrimental to health are very common among members of the sample households. It is rare to find households where none of the members practiced any of the habits. A very large proportion of villagers have realized the necessity of purification of water prior to drinking. Iodine salt which was introduced as a means to combat Iodine deficiency disorder has found wide acceptance among majority households of the studied villages.

The practice of open defecation has been completely abandoned by almost all the sample households, in its place more sophisticated facility like flush toilet has been

introduced even to the households located in rural areas. The percentage of households having more sophisticated toilet facility of flush latrine is quite significant in Thualthu and Seawng villages, both of which located few kilometers away from urban center and NH-54.

The proportion of patients who said they also visit private clinic frequently is increasing with the increase in income level. High to very high income group hardly utilized OPD Services in the government hospitals. Literacy levels of patients utilizing health care services in the Hospital OPD services range from illiterate to those that attained Graduate to Post -Graduate levels of education.

1.10 Limitations of the present research sprung mostly from the limitation of secondary sources of data. Notoriously incomplete, inaccurate and unreliable nature of hospital and other health centres records on disease related data posed itself as a serious constraint to arrive at conclusions with more precision. In spite of all its limitation, it is hoped with confidence that the present research outcome concerning the availability and utilization of health care facility and the concomitant health problems in Mizoram will be helpful to the health care planners and managers in formulating future health care policy.

The apparent inequalities in the provision of health care facilities at the various levels of spatial aggregation in this state need special attention. At the blocks level, consistency of the chosen parameters for assessing availability aspect is found to be broadly lacking. For instance, the blocks that are better placed by a set of parameters, viz, *number of health centres*, and *number of doctors and beds* in absolute quantity stand

out to be the worst served when population as a factor is taken into consideration. It is imperative that population density and dispersion of settlements need be considered first before making any decision related to location of health centers and posting of qualified doctors.

Many villages located near urban centres are found left un-served even by Community Health Worker. Notable examples may be cited of the villages near Saitual town (Thingsultliah block, Aizawl district), villages near Bairabi town (Northingdawl block, Kolasib district, which formed part of the undivided Aizawl district) villages close to Aizawl city, villages near Tlabung town (Located in Lunglei district). It is not clear if such a situation is indeed due to a policy measure that villages close to urban centres need not be provided with better health care facility as people can avail the facility located in the nearby urban area. If such a locational policy actually exists it should be modified as in such cases and in a hilly terrain like that of Mizoram people would not be able to utilize the health facility in situation of communicable diseases as these need immediate intervention from health workers.

Groups of villages located in the western lower altitudinal zone of the state close to Bangladesh need special attention when compared to the other villages located elsewhere in the state, particularly because constraints associated with distance from the nearest health centres for these groups of villages are relatively higher.

It may be gratifying, following the footstep of more advanced societies, Mizoram is experiencing morbidity shift rather recently, in which dominance of communicable diseases is overtaken by those diseases of non-communicable in nature. As such,

morbidity is dominated by diseases other than that of communicable such as hypertension, diabetes, cancer, road accidents, alcohol and drugs abuse etc. One significant reason for this appears to be changes in lifestyles and growing stress of modern life. One may expect that this trend will continue to assume greater significance in the years to come. Well-preparedness on part of the government to successfully cope with currently emerging health problem related to those specific diseases already described seems imperative. In this sense, the disease transition that characterizes Mizo society need not be a source of satisfaction, rather a growing concern for the policy makers to suitably plan health care facility including locational aspects.

Malaria, unlike most principal communicable diseases that have been around this region from time immemorial, has not declined significantly throughout the state. In spite of all the strenuous effort on part of the government to reduce its incidence, it continues to remain the major health problem of a large section of the population particularly of those living in rural areas. For those areas affected by the disease, the economic impact is enormous, not to speak of chronically infected families. Each time a person gets the disease he/or she is bound to miss 5-20 days of work. In an area fraught with hovering mosquitoes, it is imperative to make people more aware of the preventive aspect of malaria because the success of government health policy on combating malaria depends primarily on co-operation from the general public. Mention may be made of a welcoming sign in this direction that as a means to revamp malaria eradication programme already undertaken, Intensified Malaria Programme was launched from April 1st 2005 covering all the North-Eastern states including Mizoram and other 3

eastern states of Bihar, Jharkhand and Orissa to intensify the programme. The Programme has its target to collect blood smear from all fever cases, with administration of presumptive dose to them. For vector control the entire state is targeted for 2 (two) rounds of DDT spray in a year and the target is to cover all households. Establishment of Drug Distribution Centre (DDC) and Fever Treatment Depot (FTD) is also another important strategy to combat malaria prevalence. In Mizoram, as many as 957 community based centres, comprising of 716 DDCs and 238 FTD have been established till May 2005. In a state like Mizoram, where malaria is a statewide endemic or rather epidemic, emphasis needs be laid on effective monitoring and actual implementation of the programme at each level so as to keep the disease at bay.

A huge proportion of household respondents in the sample villages reported that they were satisfied with the performance of the staff in Sub-Centre located in the village. However, sub-centres in those villages are reported to have been ill-equipped with very poor facilities and medicines. Efforts of the staff in government health centres to provide health care to those patients who visited health centres, in spite of such impediments, seem quite commendable. It is recommended at the bare minimum level; in every health centre at least medicines most relevant to the common health problems of the area under its jurisdiction should be made available. Considering the impressive responses of maternity related and child health care provided at the health Sub-centres of the sample villages, it is certain that whatever new innovation introduced concerning better management of health care delivery will soon assume impressive popular response and quick diffusion socially or spatially across the state. Emphasis therefore needs be laid,

side by side, on better management of the existing health centres and establishment of new centres in those areas that are relatively ill-served.

The present research at various stages has been hampered by dearth of information and research in health and health care aspect of this region. As regards to the geographical study of health care aspect of Mizoram, the present research, in spite of all its limitation, is a humble effort in this direction. The study takes into account a broad spectrum of health care delivery and therefore marginally touches upon the growth and diffusion of modern health care facilities, common health problems, efficacy and constraints associated with utilization of health care facilities, etc.

Issues pertaining to health and health care in this isolated state offer a wide array of avenues for further research. Among many, one such direction of future research could be the study of diseases ecology in which environmental attributes should be correlated with the incidence or occurrence of diseases across the space. Though the present research highlighted some probable environmental causation of diseases, the study of diseases ecology needs to be taken more seriously at lower aggregate level with rigorous field based investigation so as to arrive at more meaningful conclusions.

As regards the morbidity, the present research confined itself primarily with the study of communicable diseases; the geographical study of emerging diseases and pandemic diseases such as, AIDs, cancer, diabetes, hypertension, drug abuse, etc need to be undertaken seriously. With regard to the health care aspect, Maternity and child health, traditional system of health care system etc may also form relevant topics for future research. As the state is experiencing morbidity and mortality shift, mortality aspect deserves rigorous treatment.

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APPENDIX-1

Mizoram: Missionaries in Health/ Medical Services

North Mizoram: Welsh Mission

Sl No.	Name	Period of Service	Designation
1.	Dr Fraser	1908 - 1912	Doctor
2.	Rev Dr John Williams	1928 – 1936	Doctor
3.	Winfred Margaret Jones	1929 – 1934	Nurse
4.	Eirlys Williams	1934 – 1938	Nurse (Sister)
5.	Gwladys Mary Evans	1936 – 1962	Nurse
6.	Gwyneth Parul Roberts	1938 – 1961	Doctor
7.	Annie Dorothy Harries	1938 – 1939	Nurse
8.	Edith Mary Parker	1945 – 1951	Nurse
9.	Dorothy Imogen	1947 – 1952	Nurse
10.	Margaret Sybil Roberts	1950	Nurse
11.	Morfydd Jones	1951	Nurse
12.	Dr L.Bonar Lindsay	1953 – 1954	Doctor

South Mizoram: Baptist Missionary Society

Sl.No	Name	Period of Service	Remarks
1.	Miss E.O Dicks	1919 – 1923	Nurse
2.	Miss E.M Oliver	1922 – 1954	Nurse
3.	Miss I.M Good	1928 – 1945	Nurse
4.	Miss M.W Shearer	1945 – 1950, 1961 - 1965	Nurse
5.	Miss Davies	1945 - 1946	Nurse
6.	Miss E.M Maltby	1952 – 1968	Nursing School Superintendent.
7.	Miss K.A Cox	1954 – 1965	Nurse
8.	Dr H.G Stockly	1957 – 1962	Doctor
9.	Ms Jean	1957 – 1962	Nurse w/o Dr H.G Stockly
10.	Miss J.T Smith	1972 - 1977	Nurse

Source: J.V Hluna (1994) Mizoram Missionary- te Chanchin, Synod Publication Board, Aizawl.

APPENDIX –II

Mizoram: Drug Distribution Centre (DDCs)/Fever Treatment Depot (FTDs) as on May 2005
Under National Vector Borne Disease Control Programme (NVBDCP)

Name of District	No. of DDC	No. of FTD	Total
Aizawl	256	70	326
Kolasib	75	15	90
Mamit	50	21	71
Champhai	97	20	117
Serchhip	50	22	72
Lunglei	90	50	140
Lawngtlai	56	16	72
Saiha	45	24	69
Total	719	238	057

Source: Annual Report 2004-05, Health & Family Welfare Department, Directorate of Health Services,
Mizoram

Appendix-III
Mizoram: Government Health Centres, 1998

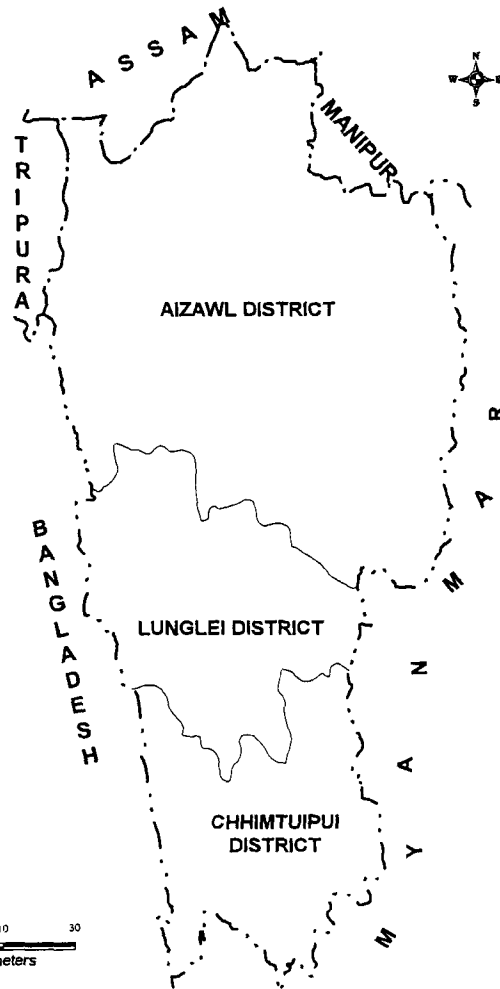
District	Block	Hospital	Main Centres PHC/SHC/CHC	Sub Centres
Aizawl	Zawlnuam	-	Zawlnuam Bairabi Mamit Kawrthah Kawrtethawveng	Zualnuam, Dampui, Mamit, Sabual, Darlak, Kawrthah, Rengdil, Zamuang, Hriphaw, Borai, Bairabi, Lusaichera, Kanhmun, Saikhawthlir, Chuhvel, Suarhliap, Bukpui, N.Hlimen, Bungmun, Kawtethawveng, Tuidam.
	W. Phaileng	-	Phaileng Phuldungsei Marpara	Phaileng 'W', Tuipuibari, Damparengpui, Lallen, Phuldungsei, Parvatui, Pukzing, Marpara, Silsuri.
	Reiek	-	Reiek Kanghmun Lengpui Sairang	Reiek, Ailawng, Lungdar 'W', Sairang, Kawrihnim, Darlung 'W', Kanghmun, Lengpui, Hmunpui, Rawpuichhip, Rulpuihlim,
	Tlangnuam	Civil Hospital Aizawl T.B Hospital, Zemabawk.	Lungdai Aizawl 'N' Aizawl 'C'	Tlangnuam, Durtlang, Zemabawk, Chaltlang, Chanmary, Ramhlun, Electric veng, Chhinga veng, Bazar Area, Bethlehem, Venghlui, Tuikual, Dinthar, Vaivakawn, Luangmual, Tanhril, Bungkawn, Khatla, Republic, Mission veng, Kulikawn, Zotlang, Sakawrtuichhun, Sihphir, Zanolawn, Lungmuat, Nisapui, Lungdai, Serkhan, Melthum, Lungleng, Melriat, Hualngo.
	N.Thingdawl	-	Kolasib Bikhawthlir Vairengte Bukpui Kawnpui	Thingdawl ICDS, Pangbalkawn, Tumpui, Diakawn, Rengtekawn, Builum, Saipum, Saiphia, Bikhawthlir, Buhchang, Vairengte, Phaisen, Bualpui, Hortoki, Kawnpui,
	Darlawn	-	Darlawn Khawruhlian Sakawrdai	Darlawn, Ratu, Serzawl 'N', Kepran, Sawleng, Vaitin, Zohmun, Thingsat, Tinghmun, Palsang, Mauchar, Sakawrdai, New Vervek, Phaileng 'E', Khawruhlian,
	Aibawk	-	Aibawk Sialsuk	Aibawk, Muallungthu, Tachhip, Phulpui, Maubawk, Sumsuih, Lamchhip, Samlukhai, Sialsuk

Cont... Aizawl	Serchhip	Serchhip Hospital	Serchhip Ngentiang Chhingchhip Thenzawl	Serchhip, New Serchhip, Hraingtlang, Chhiahtlang, Sailhau, Keitum, Bungtlang, Lungpho, Sailhawk, Thinglian, Chhingchhip, Thentalng, Hmuntha, Khawbel, Thenzawl, Buangpui.
	Thingsulthliah	-	Thingsulthliah Saitual	Thingsulthliah, Sesawng, Selling, Tlungvel, Khumtung, Baktawng, Rulchawm, Buhban, Saitual, Tualbung, Maite, Sihfa, Keifang, Lenchim, Hualtu.
	Ngopa	-	Ngopa Suangpuilawn Phuaibuang N.E Khawdungsei Mimbung Kawlkulh	Ngopa, Vanbawng, Suangpuilawn, Pullen, Khawlek, Phuaibuang, Daido, Khawlian, Lamzawl, Selam, kawlb3m, N.E Khawdungsei, Khawkawn, Mimbung, Teikhang, Kawlkulh, Chhawrtui, N.E Bualpui, Saichal, Pawlrang
	Khawzawl	Champhai Hospital	Khawzawl Champhai Rabung Hnahlan Khawhai	Khawzawl, Neihdawn, Tualpui, Chawngtlai, Tualte, Ngur, Zote, Tlangsam, Hmunhmeltha, Champhai, Champhai- Vengthlang, Ruantlang, Kelkang, Khawbung'N', Rabung, Vaikhawtlang, Tualcheng, Hnahlan, Khawhai, Vangtlang, Chalrang.
	E. Lungdar	-	E.Lungdar Farkawn Bungzung Khawbung Kawlailung Biate Vanlaiphai	E.Lungdar, Leng ICDS, Saillulak, Mualcheng, Khawlailung, Khuangleng, Sesih, Bungzung, Vanzau, Sazep, Bulfekzawl, Lianpui, Khawbung, Samthang, Dungtlang, Khuangthing, Farkawn, Khankawn, Vaphai, Riangteli, sialhawk, Tlangpuilian, Biate, N. Vanlaiphai, Lungchuan, S.Chawngtui

Lunglei	West Bunghmun	-	Buarpui Bunghmun	Buarpui, Khawlek 'S', Sertlang, Kawlhawk, Changpui, Serte, Lungchem, Zawlpui, Bunghmun 'S', Sesawm, Thenhlum, Dargawn 'W', kawnpui 'W'
	Lungsen	Tlabung Hospital	Lungsen Tlabung	Lungsen, Phairaug, Lungrang 'S', Tuisenchhuah, Rualalung, Tlabung, Puankhai, Nunsuri, Tiperghat, Chawilung, Diblighat, Tuchawng,
	Lunglei	Civil Hospital, Lunglei	Zobawk Haulawng Chhippphir Tawipui Chhippphir	Lunglei Central, Lunglei Bazar, Pukpui, Zotlang, Thuampui, Ramthar, Hauraung, Vaisam, Rahsi veng, Zobawk ICDS, Theiriat, Ralvawng, Hanchalkawn, Tawipui 'S', Mualcheng, mamte, Thualthu, Thingfal, Thehle, Three gate, Farm veng, Zohnuai,
	Hnahthial	-	Hnahthial Cherhlun S. Vanlaiphai	Hnahthail, Rawpui, Pangzawl ICDS, THiltlangm Hnahthial, Leite, Tuipui, Cherhlun, Thingsai ICDS, Baulpui 'H', Tarpho, S. Vanlaiphai, Darzo, Muallianpui, Zote, Chhippphir, Mualthuam, Haulawng, Hnahchang, Ramlaitui, Kanghmun 'S'.
Chimtuipui	Chawngte	-	Chawngte Vaseitalng Borapansuri	Chawnhte, Saizawh 'W', Chawngte PL, Sumsuih, Sumsilui, Hmunlai, Borapansuti, Jarulsuri, Vaseitlang, Damdep, Azasora, Pharva, Devasora.
	Lawngtlai	-	Lawngtlai Bungtlang 'S'	Lawngtlai, Khawmawi, mampui, Balhlakawn, Paithar, kawlwaw, Vathuampui, Tuitumhnar, Chamdur Project, mautlang, Bungtlang South, Diltalng.
	Sangau	-	Sangau Lungpher Bualpui, N.G	Sangau, Lungzarhtum, Bualpui 'NG', Cheural, Lungtian, Pangkhua, Lungpher, Saichangkawn, Vawmbuk, Phalhrang.
	Tuipang	Civil Hospital Saiha	Tuipang Saiha Chhuarlung Chakhang Vahai	Tuipang 'L', Tuipang 'V', Tuisih, Zangling, Chapui, Phurzawl, Tongkawlong, Lawngban, Vahi, Laki, Saiha, Old Saiha, Maubawk, Theiva, Tuipufferi, Tuisumpui, Latawh, Rawmibawk, Chhuarlung, Niawhtlang, Serkawr, Chakhang, Siata.

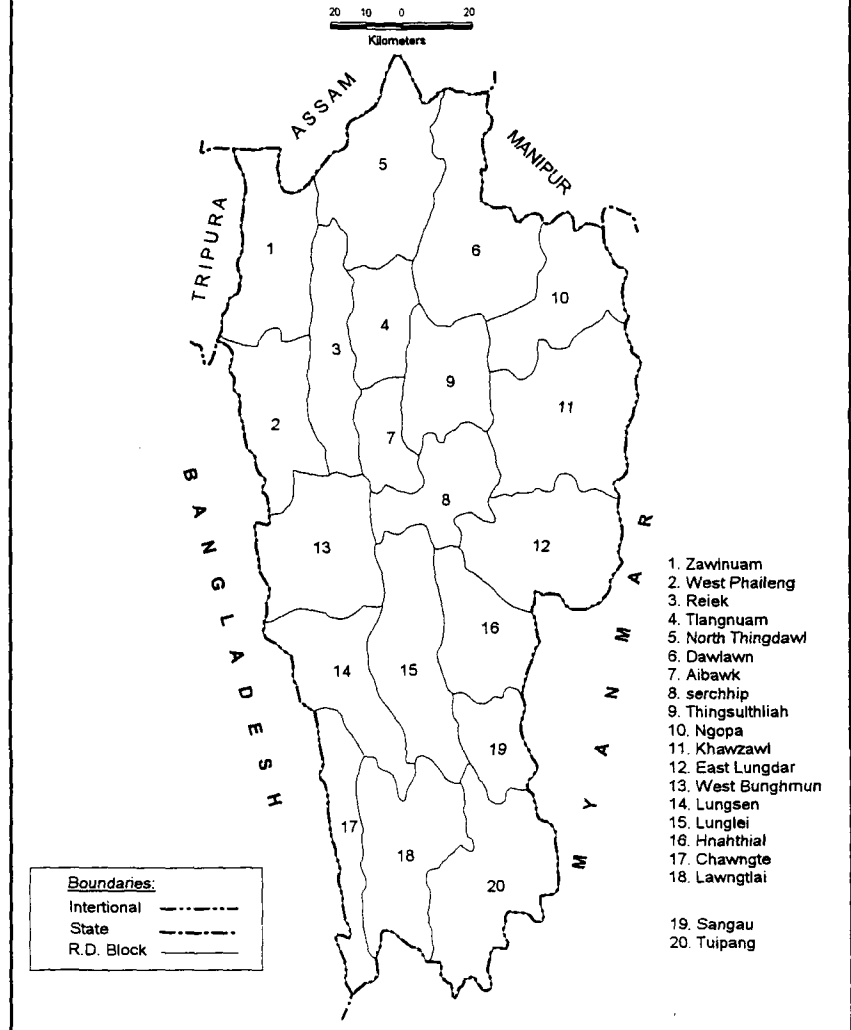
Source: Compiled from Handbook of Health & Family Welfare Department, 1998, Directorate of Health Services, Mizoram

MIZORAM 1991



Appendix IV

MIZORAM R.D. BLOCKS AS IN 1991



Appendix - V

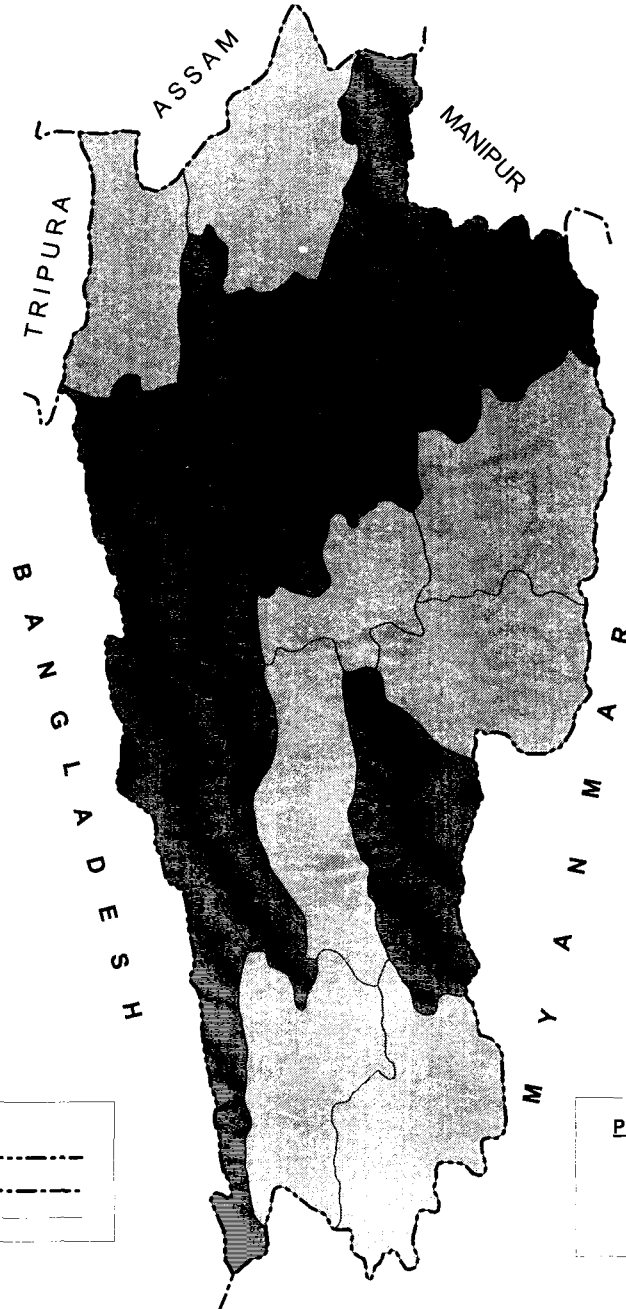
Appendix – VI

Population Concentration
MIZORAM

BLOCK-WISE DISTRIBUTION OF POPULATION

(1991)

20 10 0 20
Kilometers



Boundaries:

International ———
State ———
R.D. Block ———

Population in Percent

Below 4
4 - 8
Above 8

Appendix – VII

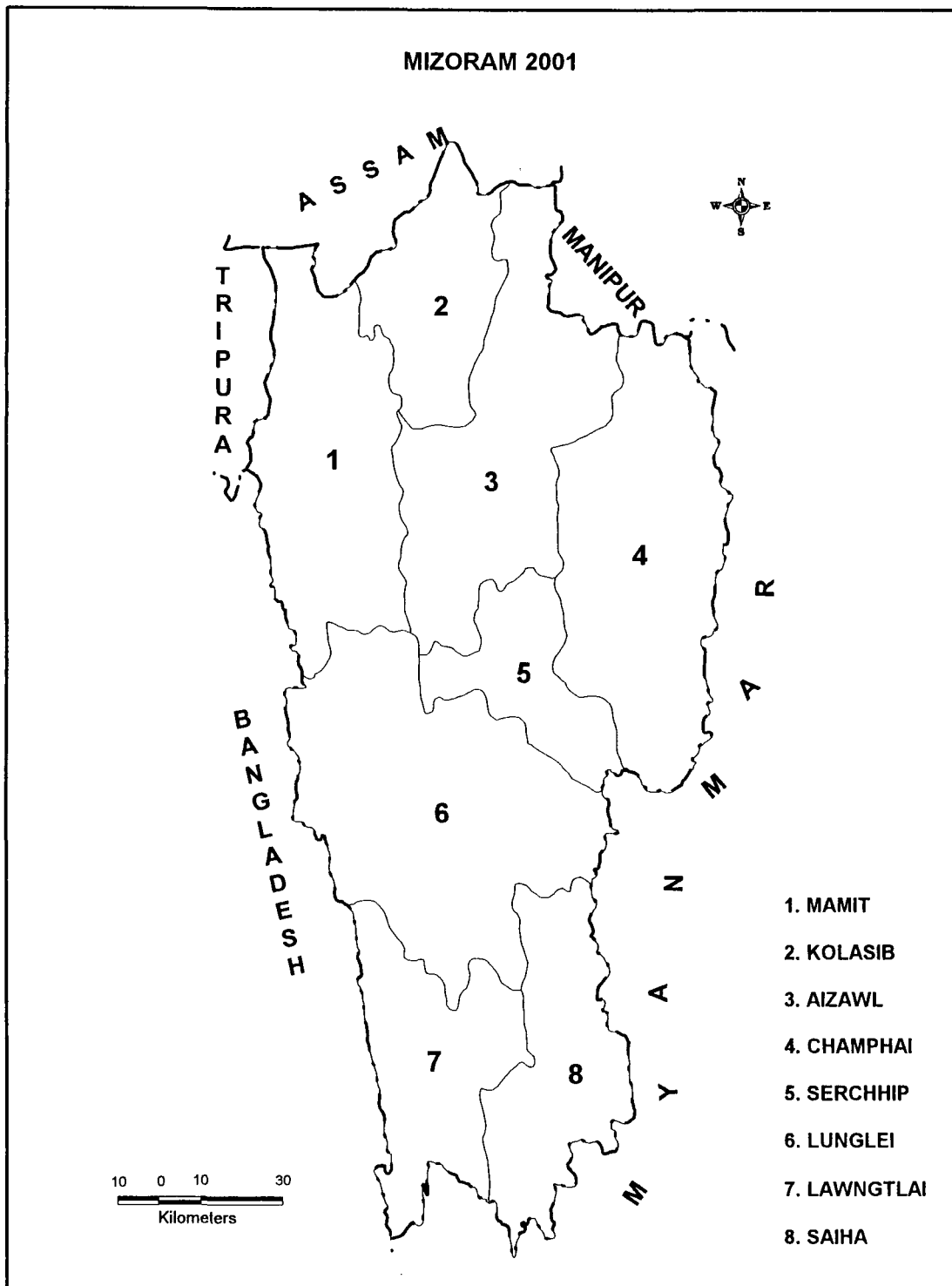
PERFORMA MONTHLY STATEMENT SHOWING INSTITUTIONAL CASES AND DEATHS DUE TO PRINCIPAL COMMUNICABLE DISEASES

1. NAME OF CENTRE: _____

2. FOR THE MONTH OF: _____

Sl.No.	Name of Diseases	Patients Treated						Death	
		OPD		IPD		TOTAL		IPD Only	
		M	F	M	F	M	F	M	F
1.	Acute Diarrhoeal Diseases (including Gastro enteritis & Cholera)								
2.	Diphtheria (032)								
3.	Acute Poliomyelitis (045)								
4.	Tetanus-Other than Neonatal (045)								
5.	Neonatal Tetanus (771-3)								
6.	Whooping cough (033)								
7.	Measles (055)								
8.	Acute Respiratory infection								
9.	Pneumonia (480-48)								
10.	Enteric Fever (002)								
11.	Viral Hepatitis (070)								
12.	Japanese Encephalitis (062.0)								
13.	Meningococcal Meningitis (036.0,320.5)								
14.	Rabies (071)								
15.	Syphilis (090-098)								
16.	Conococcal Infection (098)								
17.	Pulmonary Tuberculosis (011)								
18.	All Other diseases treated in the institutions excluding above mentioned diseases.								
19.	Total								

N.B: Surveillance on Principal Communicable Diseases other than those covered under the International Health Regulations is being maintained by Central Bureau of Health Investigation (CBHI) on the basis of the monthly reports received from States/Union territories in the prescribed Performa. Each Health Centre, therefore, is required to submit such report to the District Health Office for onward submission to States/UTs Health Directorate for compilation.



Appendix VIII

APPENDIX - IX

Mizoram: Top 15 Medically Certified Causes of Deaths, 2004

Rank	Cause of Death	Male	Female	Total
1	Cancer	284	181	465
2	Malaria	241	118	359
3	Others not elsewhere Classified	213	115	328
4	Heath Diseases and Heart Attack	133	89	222
5	Pneumonia	84	60	144
6	Cardiovascular (Paralysis)	101	41	142
7	Jaundice	59	33	92
8	Tuberculosis	56	22	78
9	Transport Accidents	61	16	77
10	Meningitis	35	35	70
11	Not Stated	36	22	58
12	Anaemia	30	18	48
13	Dysentry,Diarrhoea & Gastro-enteritis	24	13	37
14.	Other Accidents	23	13	36
15	Diphtheria	22	13	35
15	Senility	16	19	35
		1418	808	2226
Total Deaths including not specified in this table		1905	1089	2994

Source: Registrar of Deaths and Births, Directorate of Economic and Statistic Department, Mizoram.

Appendix- X

Mizoram : Disease Burden

Sl. No	Name of Disease	1996-1997		1997-1998		1998-1999		1999-2000		2000-2001	
		No. of Cases	No. of Deaths	No. of Cases	No. of Deaths	No. of Cases	No. of Deaths	No. of Cases	No. of Deaths	No. of Cases	No. of Deaths
1	Malaria	76363	130	55736	87	56422	131	38109	109	30854	112
2	Intestinal Infectious Diseases	43631	30	43004	37	44692	48	16965	18	15610	15
3	Tuberculosis	1618	17	1848	23	2131	30	1373	24	1230	29
4	Cancer Cases	162	4	436	11	531	13	405	26	510	43
5	Viral Hepatitis	1521	10	1359	13	1639	18	916	2	1160	4
6	Endocrine, Metabolic, etc. Diseases	409	2	691	2	838	3	1616	10	1810	9
7	Anaemia	4434	5	4187	8	3562	22	4294	15	3646	12
8	Nutritional Deficiencies	904	-	929	-	864	1	1392	-	1208	-
9	Disorder of the Eye and Adnexia	13458	-	10009	-	11368	-	8699	-	8681	-
10	ARD	53175	55	53715	44	2031	70	10718	563	8724	379

Source: State Epidemiology Cell, Directorate of Health Services, Mizoram.

N.B: The Researcher was told by an official in the State Epidemiology Cell that the compilation of disease burden has been done hastily for a particular seminar on Health in the State and needs to be read with caution. This however, broadly reveals the major health problems / diseases of the State.

APPENDIX -XI

MZORAM: DISTRICT WISE EPIDEMIOLOGICAL DATA FROM 2000 TO 2004

Name of District	Year	Population	Blood Slide Collection/ Exam	ABER	Positive	PF	PF%	Confirmed Death	API
Aizawl West	2000	331719	86737	26.14	4271	3116	72.95	24	12.87
	2001	337810	94601	28.00	5800	4431	76.39	35	17.16
	2002	223655	42042	18.79	891	376	42.19	14	3.98
	2003	247672	34840	14.07	585	378	64.61	25	2.36
	2004	247672	49740	20.08	855	672	78.59	30	3.45
Kolasib	2002	60137	32243	53.61	2244	1914	85.29	4	37.31
	2003	79023	30748	38.91	2026	1884	92.99	3	25.63
	2004	79023	30564	38.67	1569	1418	90.37	7	19.85
Mamit	2002	54018	27024	50.02	1184	284	23.98	3	21.91
	2003	53044	17937	33.81	640	197	30.78	4	12.06
	2004	53044	22565	42.54	1012	482	47.62	15	19.07
Aizawl East	2000	232136	58945	25.39	948	635	66.98	5	4.08
	2001	235472	56180	23.85	581	410	70.56	4	2.46
	2002	70632	26621	37.68	153	122	79.73	5	2.16
	2003	103157	15184	14.71	62	51	82.25	3	0.60
	2004	103157	14750	14.29	43	41	95.34	4	0.41
Serchhip	2002	53561	19311	36.05	317	235	74.13	7	5.91
	2003	55967	18847	33.67	316	222	70.25	8	5.64
	2004	55967	19164	34.24	317	192	60.56	15	5.66
Champhai	2002	118073	14026	11.87	106	76	71.69	2	0.89
	2003	115468	24380	21.11	249	146	58.63	1	2.16
	2004	115468	18771	16.25	246	106	43.08	0	2.13
Lunglei	2000	109972	34506	31.37	1845	888	48.13	2	16.77
	2001	115476	31103	26.93	3229	960	29.73	3	27.96
	2002	115476	35011	30.31	2074	779	37.56	0	17.96
	2003	122390	35979	29.40	2171	969	45.52	4	17.74
	2004	122390	34767	28.40	2059	880	42.73	1	16.82
Saiha	2000	109885	17293	15.73	1053	167	15.85	2	9.58
	2001	118087	22608	19.14	1319	154	11.67	1	11.16
	2002	56599	18362	32.44	765	76	9.93	0	13.51
	2003	60690	16246	26.77	933	98	10.50	0	15.37
	2004	60690	18876	31.10	1426	183	12.83	0	23.49
Lawngtlai	2002	61488	4882	7.93	125	70	56.00	0	2.03
	2003	68278	9027	13.22	311	222	71.38	0	4.55
	2004	68278	8119	11.89	303	196	64.68	0	4.43
	2000	783712	197481	25.19	8117	4806	59.20	33	10.35
	2001	806845	204492	25.34	9929	5955	59.97	43	12.30
TOTAL	2002	813639	219522	26.98	7859	3932	50.03	35	9.65
	2003	905689	203188	22.43	7293	4167	57.14	48	8.05
	2004	905689	217316	23.99	7830	4170	53.25	72	8.64

Source: State Malaria Control Unit (NVBDCP), Directorate of Health Services, Mizoram

APPENDIX - XII

Mizoram: Malarial Cases, 2001

Name of Block	BSE	Pos	P.F	Slide + rate	PF %
Zawlnuam	16125	682	341	4.23	50
W. Phaileng	7319	799	403	10.84	50.43
Reiek	4782	153	141	3.2	92.16
Tlangnuam	30979	888	670	2.87	75.45
N.Thingdawl	38665	3564	3084	9.22	86.53
Darlawn	5315	8	6	0.15	75
Aibawk	5458	154	48	2.82	31.17
Serchhip	14202	362	180	2.55	49.72
Thingsulthiah	7341	19	16	0.26	84.21
Ngopa	12866	49	39	0.38	79.59
Khawzawl	14041	210	140	1.5	66.67
E.Lungdar	11027	324	284	2.94	87.65
W.Bunghmun	4246	346	116	8.15	33.53
Lungsen	5909	577	265	9.76	45.93
Lunglei	16475	662	372	4.02	56.12
Hnahthial	8398	342	168	4.07	49.12
Chawngte	2552	104	41	4.07	39.42
Lawngtlai	3529	210	117	5.95	55.71
Sangau	2847	171	6	6	3.51
Tuipang	13159	860	37	6.54	4.3

Source: Compiled and Computed from records obtained from Distirct CMO Offices

Appendix- XIII

VILLAGE SCHEDULE

Name of the Village : _____
 District : _____
 Block : _____
 Location : Valley / Hill Slope /
Top of the Hills / Plain
 Distance from the main Road : _____
 Type of road connecting the main road : _____
 Village : Electrified / Not Electrified.
 Nearest urban centre : Name _____
 Distance _____

1. DEMOGRAPHIC STRUCTURE:

TOTAL POPULATION	MALE	FEMALE	TOTAL NO. OF HOUSEHOLD

LITERACY LEVEL:

TOTAL LITERATES	PRIMARY	MIDDLE	HSLC	HSSLC	Graduate	Post Graduate

2. What is the main occupation of the people living in this Village?

= _____

3. What is the most common disease/health problem of this Village?

= _____

4. What is the main source of water supply in the Village?

= Spring / Water tank / Rain water / River / Stream
Piped water / Pond / Well / Ground water pump.

5. What is the main mode of Communication?

= Jeep / Car / Bus / Bullocart / Animal / Human Porter.

6. Does the Village enjoy Telecommunication facilities?

= Yes [☐] No [☐]

7. Does the Village have Post and Telegraph Office?

= Yes [☐] No [☐]

8. Is there a Market/Hat in the Village?

= Yes [☐] No [☐]

9. Educational Amenities

(Tick what ever is available)

School	No. of School	Govt./Private
Aganwadi		
Primary		
Middle		
High School		
Others _____		

10. MEDICAL AMENITIES

MEDICAL AMENITIES	No. of Amenities	If not available distance of the nearest centre where it is available
Sub - Centre		
PHC/SHC		
CHC		
Govt. Hospital		
Private Hospital		
Private Clinic		
Maternity Care		
Health Worker		
Community Health Guide		
Govt. Doctor		
Private Doctor		
Nurse/Midwife		
Others: _____		

11. How often Health Worker visit the Village?

= (_____) in a year.
Specify

12. SANITATION SYSTEM of the Village

= (_____)
Specify

Appendix – XIV

HOUSEHOLD SCHEDULE

A. GENERAL INFORMATION

Village : _____

Household Code : _____

Name of the Head of Household : _____

Ethnic Status/Tribe : _____

Caste : _____

Religion : _____

Language : _____

B. DEMOGRAPHIC STRUCTURE

TABLE – I

Relation to the Head of Household	Age	Sex M/F	Marital Status	If married, Age when married	Education Level	Remarks
1. Head of H.H						
2.						
3.						
4.						
5.						
6.						
7.						

C. MORTALITY

1. Did any usual resident of this household die since January 1998 (the last five years)?

: Yes ☐

: No ☐

2. If yes, how many persons died?

:

3. Information about the deceased.

Relation to the Head of Household	Sex Male/Female	Age how old was he/she when he/she died?	In what Month and Year he/she died?	What did he/she died of?	Remarks
1.					
2.					
3.					

C. MORBIDITY & AILMENTS

[illegible]

E. (a) AVAILABILITY, UTILIZATION AND CONSTRAINT.

1. When members of your household go to Government Health institution (during the last one year) for treatment. Did he/she receive the service he/she went for?

= Yes

= No

2. During the visit did the Staff spend enough time with him/her?

= Yes

= No

3. Did the Staff talk to him/her nicely, somewhat nicely, or not nice?

= Nicely

= Somewhat nicely

Not nice

4. What would he/she say about the Health facility?

= Very Clean

= Somewhat clean

= Not Clean

5. Is the family facing any constraint in utilizing the health institution nearby?

6. in accessibility due to distance

a) Due to poor performance of medical personnel

b) Lack of equipment, medicines, etc., in the Health Centre

7. During the Last 12 Months, has a Health and family planning worker visited the household

= Yes

= No

8. If yes, how many times?

= _____

9. What would you say about the Government Health facility available within the Village

= Adequate Poor

Very Poor Very good

10. Whom does the family prefer for medical check up?
= Government Doctor/inPHC/SHC Hospital
Private Doctor/Private Clinic

(b) ANTENATAL, NATAL, NEONATAL CARE

1. Is there a new birth in the family since 1st January 2001?
= Yes
No

(If there is more than one birth, only the last birth should be recorded)

2. When the Mother pregnant with the new born. Did she go for antenatal check up?

= Yes
No

3. Whom did the Mother see?

= Govt. Doctor
ANM/Nurse/Midwife
Other health professional
Traditional birth attendant
Private Doctor

4. How many time the mother receive antenatal check-ups during this pregnancy?

= No of times _____

5. During this pregnancy, were the Mother given an injection in the arm to prevent her and the baby from getting Tetanus?

= Yes
No

6. When the mother pregnant with the new born. Was she given any iron folic tablets or Syrup?

= Yes
No

7. If the Mother did not receive an antenatal checkup. Give reasons?

- =
- | | |
|--------------------------|----------------------|
| Not necessary | <input type="text"/> |
| Cost too much | <input type="text"/> |
| Too far/No Transport | <input type="text"/> |
| No time to go | <input type="text"/> |
| Family did not allow | <input type="text"/> |
| Lack of Knowledge | <input type="text"/> |
| No Health worker visited | <input type="text"/> |

8. Where did the Mother give birth to?

- =
- | | |
|--|----------------------|
| Home | <input type="text"/> |
| Govt. Health facility CHC/DHC/Sub-Centre | <input type="text"/> |
| Government Hospital | <input type="text"/> |
| Private Hospital/Clinic | <input type="text"/> |
| Other | <input type="text"/> |

9. If home delivery, what is the reason the mother did not go to health facility for delivery?

- =
- | | |
|----------------------|----------------------|
| Not necessary | <input type="text"/> |
| Cost too much | <input type="text"/> |
| Too far/No Transport | <input type="text"/> |
| Poor quality service | <input type="text"/> |
| Family did not allow | <input type="text"/> |
| Better care at home | <input type="text"/> |
| Lack of knowledge | <input type="text"/> |
- Others _____

(Specify)

10. Who assisted with the delivery of the newborn?

- =
- | | |
|-----------------------------------|----------------------|
| Doctor | <input type="text"/> |
| ANM/Nurse/Midwife/LHU | <input type="text"/> |
| Other Health Professional | <input type="text"/> |
| DAI (Traditional Birth Attendant) | <input type="text"/> |
| Friend/Relative | <input type="text"/> |

11. Did the newborn receive any vaccination to prevent him/her from getting disease?

= Yes ☐
No ☐

Please tick whatever the Vaccination/Vitamin the newborn has received.

VACCINE/ VITAMIN	Time	Remarks
BGG DPT POLIO Measles Vitamin 'A' Other _____ _____ _____		

12. Where did he/she receive most of his/her Vaccination?

= Govt. Hospital ☐
 PHC/Sub Centre/CHC etc ☐
 Govt. Mobile Clinic ☐
 Pulse Polio Location ☐
 Private Hospital/Clinic ☐
 Pharmacy/Drug Store ☐

13. How often the family use traditional medicines for Treatment of illness?

= Never ☐
 Sometimes ☐
 Always ☐

F. **FOOD AND OTHER HABITS:**

1. How often do your family consume the following items:

	Daily	Weekly	Occasionally	Never
Milk or Curd	1	2	3	4
Pulses or beans	1	2	3	4
Potato	1	2	3	4
Green leafy Vegetables	1	2	3	4
Other Vegetables	1	2	3	4
Fruits	1	2	3	4
Eggs	1	2	3	4
Chicken, Meat or Fish	1	2	3	4

2. What is the main source of drinking water for members of your household?

= Piped Water

Piped into Residence/Yard/Plot

Public Tap

Ground Water

Hand pump in Residence/Yard/Plot

Public hand pump

Well Water

Well in Residence/Yard/Plot

Covered Well

Open Well

Public Well

Surface Water

Spring

River/Stream

Pond/Lake

Dam

Rainwater

Tanker Truck

3. What do you do to purify drinking water?

= Stain by Cloth

Water Filter

Boiling

Electronic purifier

Nothing

Other

4. Type of Salt use for Cooking?

= 1) Coarse Salt

2) Iodized Salt

5. Type of oil use for Cooking.

= _____
(Specify)

6. Does any one of the family member have the following habits? Chewing pan or Tobacco. Drink Alcohol, Smoke.

= If Yes fill in the Column
(Tick the habits)

Who in the family (No. Serial from Table I)	Chew pan or Tobacco	Drink Alcohol	Smoke

G. HOUSE OR HOME STRUCTURE

1. Type of House

= Pucca

Semi-Pucca

Kachha

Roof _____

Wells _____

Floor _____

2. What kind of toilet facility does your household have?

- (a) Flush Toilet (Septic Tank)
- (b) Pit Toilet/Latrine
- (c) No Family/Field
- (d) Other _____
(Specify)

3. How many rooms are there in your household?
= No. of Rooms: _____

4. Do you have separate room, which is used, as a Kitchen?
= Yes / No

5. What type of fuel does your household mainly use for Cooking?

= Wood		Electricity	
Crop residue		Bio-Gas	
Charcoal		Other	
Kerosene		LPG (Gas in Cylinder)	

6. What is the main source of lightning for your household?

= Electricity	
Kerosene	
Gas	
Oil	
Candle	
Other	_____

(Specify)

2. When members of your household get sick, where do you generally go for Treatment?

- | | | |
|----|----------------------------|----------------------|
| a) | Sub- Centre | <input type="text"/> |
| b) | CHC/Rural Hospital/PHC/SHC | <input type="text"/> |
| c) | Govt. Hospital | <input type="text"/> |
| d) | Private Hospital/Clinic | <input type="text"/> |
| e) | Private Doctor | <input type="text"/> |
| f) | Pharmacy/Drug Store | <input type="text"/> |
| g) | Traditional Healer | <input type="text"/> |
| h) | Home Treatment | <input type="text"/> |

3. During the last one-year if any of the family member got treatment from Govt. Hospital/PHC/Sub-Centre, etc. Fill in the column.

Who in the family (Relation to the Head of Household)	When (time)	Sex	Age	Illness	1. In-patient 2. Out patient
					1 2
					1 2
					1 2
					1 2

Appendix –XV

Spot Investigation Schedule

Health Care Utilization – OPD Services in Civil Hospital, Aizawl.

1) Name of Patient/ Respondent : _____

2) Age : _____

3) Sex : _____

4) Ethnic Status : _____

5) Place of Residence : _____

Broad Distance in Km. : _____

(Determined & filled in by the Researcher)

Tick whatever is applicable

6) Literacy/ Education Level:-

- | | |
|-----------------------------|----------|
| (a) Illiterate | () |
| (b) Primary | () |
| (c) Middle | () |
| (d) HSLC | () |
| (e) Graduate/ Post Graduate | () |

7) Nature of Illness/Ailments:- _____

8) Occupation : _____

9) Average Monthly Family Income:-

- | | |
|-----------------------|----------|
| (a) Below Rs 1000 | () |
| (b) Rs 1000-5000 | () |
| (c) Rs 5000-10,000 | () |
| (d) Rs 10,000 -20,000 | () |
| (e) Above Rs 20,000 | () |

10) Whether he/she used to go to private clinic for medical check up

- | | |
|-----------|----------|
| (a) Never | () |
| (b) Often | () |

BRIEF BIO DATA

Name : *Zarzoliana*

Sex : Male

Nationality : Indian

Ethnic Status : Mizo

Whether SC/ST : Scheduled Tribe

Father's Name : C.Vanlalhraia.

Mother's Name : K.Vanlallawmi.

Date of Birth : 6th April 1973.

Place of Birth : Champhai,.Mizoram.

Address : Y- 35, Ramhlun South,
Aizawl- 796001, Mizoram.

Occupation : Teaching.

Service Experience:

Lecturer, Department of Geography, J.Buana College, Lunglei, Mizoram	From 13.5.1999 to 27.3.2003
Lecturer, Department of Geography, Hrangbana College, Aizawl,Mizoram	From 27.3.2003 till date

Academic Profile:

	Year	Board/University	Division	Percentage
HSLC	1990	MBSE	II	54.78
PUC	1992	NEHU	II	47.89
BA	1994	NEHU	II	52.92
BA Hons(Geog.)	1995	NEHU	II	58.88
MA/MSc(Geog.)	1997	NEHU	I	64.22
PhD Registration	1998 Extended up to 2005	NEHU	-	-
Lectureship	June 2000	UGC, National Education/Eligibility Test (NET) India.		