Chapter 2

Materials and Methods

2.1 Manipur at a Glance

North east India with an area of 2,55,000 sq.km is located between 22° N and 29.3° N latitudes and 89.7° E and 97.8° E longitudes. This is largely hilly area comprising about 7percent land of India with a total population of 40 million. North east India which constitutes 8 states namely, Assam, Arunachal Pradesh, Meghalaya, Manipur, Mizoram, Nagaland, Sikkim and Tripura is the homeland of many ethnic groups who came from different directions in different periods of time. It lies deep in the lap of easternmost Himalayan hills in north-eastern part of India connected to rest of India by merely 20 km of wide land (at Siliguri, West Bengal). The North-East India shares over 2,000 km of border with Bhutan, China, Myanmar and Bangladesh. Owing to its geo-political importance in the Indian subcontinent, the area has attracted over the years, specialists from different fields especially sociologists and anthropologists.

Manipur as one of the eight sister states of Northeast India, and is located between 23°50'N latitude to 25°42'N latitude and 92° 58'E longitude to 94°45'E longitude in the extreme eastern parts of India (Vedaya, 1998). The state is bounded by Nagaland in the north, by Mizoram in the south, by Assam in the west, and by the borders of the country Myanmar in the east as well as in the south. The state occupies an area of 22,327 sq.km with total population of 22,93,896 (Census of India, 2001). Imphal, the capital lies in an oval-shaped valley of approximately 700 square miles surrounded by Blue Mountains and is at an elevation of 790 meters above the sea level (DES-Government of Manipur). The slope of the valley is from north to south. The presence of the mountain ranges not only prevents the cold winds from the north from reaching the valley but also acts as a barrier to the cyclonic storms originating from the Bay of Bengal. The State has population density of 111per sq. km. (as against the national average of 324). The decadal growth rate of the state is 24.88% (against 21.54% for
Chapter 2

Materials and Methods

66

Demographic study with special reference to reproductive and child health among Chiru tribe of Manipur

the country) (Census of India, 2001) and the population of the state continues to grow at a much faster rate than the national rate.

2.2 History of Manipur

Manipur like the rest of north east India, was not annexed by any of the previous Indian empires; this led to a sharp difference in culture and traditions in Manipur and the north east with the rest of India (BBC, 2004). Later Manipur came under British rule as a princely state in 1891. This ended the independent status of the Kingdom of Manipur, the last kingdom to be incorporated into British India. During the Second World War, Manipur was the scene of many fierce battles between the Japanese and the Allied forces. The Japanese were beaten back before they could enter Imphal, and this proved to be one of the turning points of the War. After the War, the Manipur Constitution Act, 1947, established a democratic form of government with the then Maharaja as the Executive Head and an elected legislature. In 1949, Maharaja Bodhchandra was summoned to Shillong, capital of the then Indian province of Assam. The legislative assembly was dissolved on the accession of the state to the republic of India in October 1949. Manipur was a Union Territory from 1956 and later became a full-fledged state of India in 1972.

2.3 Geography, Climate and Vegetation

The climate of Manipur is largely influenced by the topography of this hilly region which defines the geography of Manipur. The Manipur has a salubrious climate controlled by orography, the mountains, the valley winds and the reversal of monsoon winds. Although, the state has a pleasant sub-tropical climate in general, variations in temperature and rainfall in various parts of the state is observed. Most of the places in the valley as well as in the hills have a pleasant climate. However, one will experience oppressive heat in summer at places like Jiribam and Moreh and intense cold in winter up in the heights of Ukhrul, Mao, Tamenglong, etc. The hill being the absorber and emitter of heat, it is heated and cooled more speedily than the surrounding air and this has tendency of exerting a thermal influence. The extreme climate conditions are confined only to a few places but on the whole, the state has a salubrious climate (Environment report of Manipur, 2006-07).
The rainy season in Manipur generally starts from May and lasts up to September. The distribution of rainfall is generally higher in the hilly areas as compared to valley areas of Manipur. On an average the rainfalls in the hills are higher by about 2/3 times than that of valley areas. Some rainfall is experienced in all the months of the year but most of the rainfalls are normally found during the period from May to September when the state is under the spell of south-west monsoon. Another phenomenon observed is that the quantum of rainfall received in the state is reducing gradually. For instance the rainfall recorded in 1961 at Tamenglong was recorded to be 4017mm as against 1059mm recorded in 2001 for the same center. On the other hand the rainfall recorded at Imphal in 1961 stood at 1413mm as against the rainfall of 994mm in 2001. One of the reasons may be perhaps due to degradation of environmental factors. Of course, the quantum and distribution of rainfall seems to be dependent on the vagaries of the nature (Environment report of Manipur, 2006-07).

The cold season starts from October and lasts till the end of February. The temperature starts rising from the month of March and the highest day-temperature is generally experienced in the month of May. The annual averages of maximum and minimum temperature were recorded to be 33.0°C and 10.0°C in 1961 as against 39.5°C and 2.0°C in 2000 and 35.0°C and 2.0°C in 2001. The variation of temperature is not sudden but increases or reduces gradually. On the whole the climate of Manipur is found to be invigorating and enjoyable (Environment report of Manipur, 2006-07).

Physiographically, Manipur may be characterised in two distinct physical regions – an outlying area of rugged hills and narrow valleys, and the inner area of flat plain, with all associated land forms. These two areas are not only distinct in respect of physical features but are also conspicuous with regard to various flora and fauna. The valley region would have been a monotonous, featureless plain but for a number of hills and mounds rising above the flat surface. The Loktak Lake is an important feature of the central plain. The total area occupied by all the lakes is about 600 sqkm. The altitude ranges from 40 m at Jiribam to 2,994 m at Mt. Iso Peak near Mao Songsong.

The soil cover can be divided into two broad types, viz. the red ferruginous soil in the hill area and the alluvium in the valley. The valley soils generally contain loam, small
rock fragments, sand and sandy clay, and are quite varied. On the plains, especially flood plains and deltas, the soil is quite thick. The top soil on the steep slopes is very thin. Soil on the steep hill slopes is subject to high erosion, resulting in gullies and barren rock slopes. The normal pH value ranges from 5.4 to 6.8. The climate of the State is salubrious with approximate average annual rainfall varying from 933 mm at Imphal to 2593 mm at Tamenglong. The temperature ranges from sub-zero to 36°C. (Director of Commerce and Industries, Manipur. "Soil and Climate of Manipur", http://investinmanipur.nic.in/gp_soil.htm. Retrieved October 31, 2010).

The natural vegetation occupies an area of about 14,365 km² which is nearly 64% of the total geographical area of the state. The vegetation consists of a large variety of plants ranging from short and tall grasses, reeds and bamboos to trees of various species. Broadly, there are four types of forests:

- Tropical Semi-evergreen.
- Dry Temperate Forest
- Sub-Tropical Pine
- Tropical Moist Deciduous

Teak, pine, oak, uningthou, leihao, bamboo, cane, etc. are important forest resources growing in plenty. In addition, rubber, tea, coffee, orange, and cardamom are grown in hill areas. Rice is the staple food for Manipuris. Rice and cash crops make up the main vegetation cover in the valley.

2.4 Transport and Communication

Economic growth of a state/country is linked with aspirations of the people who desire to have better quality of life. Thus development of physical infrastructure has to be backed by the people’s active support. Most important and crucial physical infrastructure is means of transport and communication.

Archaeological findings have revealed that Manipur was inhabited by pre-historic people since the Stone Age (Singh, 2009). Cultural relics of pre-historic period were found from a number of caves and sites. However, evidence of goods transport and
communication system is quite lacking. In the “Gazetteer of Manipur”, 32 trade routes were briefly described by Captain, EW Dun in 1886. The first trade route between the state of Manipur and rest of India is the one which is now known as Old Cachar road which runs from Imphal to Lakhipur, a small town on the bank of river Barak. It was initially constructed in 1535 during the reign of Manipur King Kabomba (1524-42) mainly because of establishing relationship with the king of Tekhao (Assam). The local name of the road is referred to as Tongjei Maril. It start from Imphal and passes through Bishnupur (Lamangdong), Khoupum, Nungba, Jirighat and then to Lakhipur. Improvement of the road was made by the then British Government shortly after Burmese war and maintained up to 1865. After 1865, maintenance was done by the State Government of Manipur during the time of Maharaja Chandrakriti. The Old Cachar (Tongjei Maril) road was the main trade route between the State of Manipur and the rest of India until the construction of Imphal-Dimapur road in 1881.

Sir James Johnstone, the then Political Agent of the British Government to Manipur had foreseen the utility of connecting Imphal, the capital of Manipur with the Assam valley. The road from Golaghat to Kohima was already constructed. The Manipur King, Maharaja Chandrakriti also took an active interest in the project of connecting Imphal with the Kohima section road. The road construction between Imphal and Mao was completed in 1881 under the supervision of Lt. Raban of the Royal Engineers. In subsequent years, the road was improved and extended up to Dimapur. When the rail-head was opened at Dimapur, the Imphal-Dimapur road became the main artery of communication and trade between Manipur and the rest of India. There was possibility of having a number of trade routes between Manipur and Burma (Myanmar). Some of them were described in the Gazetteer of Manipur written by Captain EW Dun. The years of construction and detailed accounts of such roads could not be found out. Though, there is no concrete evidence of having such trade-routes, many mentions would be found in the history of Manipur for having good or bad relations with Shan Kingdom, Burma (Myanmar) and China. Manipur’s cultural affinity since the pre-historic time with the Chinese culture was also exposed from the Napachik excavation 1981 (Singh, 1997). Thus, from the historical events, cultural affinities and also folk tales, the existence of some kind of roads between Manipur
and Myanmar (Burma) may not be ruled out but more rigorous research for at least the historical period may be the right answer.

In the overall transport scenario, various modes of transport like, the road, railway, air and water transport are complementary to each other considering the general system of transport network. However, in Manipur because of its topography, the major mode of transportation has turned out to be road transport. Next to road transport, air transport is 2nd important mode of transport. Though, a rail-head was opened at Jiribam, it is not operative. Water transport is also negligible in the absence of navigable water bodies. Before introducing the mechanized transport machineries, the modes of transport were bullock carts and porters (head-load) in the valley areas where it was mostly porters in the hill areas. Within the road network, national highways play the key role for transporting freight and passenger traffic.

Manipur being surrounded by high hill ranges is yet to have railway lines both within as well as to connect with other states. The State is served by three National Highways, viz. NH.39, NH.53 and NH.150. The National Highway 39 passes through Imphal and Mao in Manipur, and Kohima and Dimapur in Nagaland. This Highway (Dimapur to Imphal), also known as Dimapur–Imphal Road, further extends from Imphal to Moreh, then runs towards Tamu of Myanmar and is called Indo–Burma Road. Imphal is also connected with Silchar in Assam by National Highway 53. Jessami-Tipaimukh (NH-150) road is taken up during the 10th five year plan where the NH- 53 was taken in the 2nd five year plan (1956-61). The road condition in the valley areas of Manipur is comparatively better as compared to the hill areas. In the hills landscape, gradients, soil conditions, deforestation etc. have considerable affects.
Tulihal Airport, the airport of Imphal, connects the state capital with Delhi, Kolkata, Guwahati and Agartala. National Highway NH-39 links Manipur with the rest of the country through the railway stations at Dimapur in Nagaland at a distance of 215 km (134 mi) from Imphal. National Highway 53 (India) connects Manipur with another railway station at Silchar in Assam, which is 269 km (167 mi) away from Imphal. The road network of Manipur, with a length of 7,170 km (4,460 mi) connects all the important towns and distant villages.

2.5 People

Manipur has a population of 2,380,000 (Census, 2001). Of this, 58.9% live in the valley and the remaining 41.1% in the hilly region. The hills are inhabited mainly by the Nagas, Kukis (Chin-Mizos) and smaller tribal communities and the valley mainly by the Meiteis (including Meitei Muslims known as Meitei Pangal or Pangal and "Bamons" who are literally non-Meiteis). Some Naga and Kuki settlements are also found in the valley region.

2.6 Religion

The history of Manipur is undoubtedly the history of the Meiteis- the ruling community of the state. From the most credible tradition we find that the Meitei community was a product of an amalgamation of not less than seven communities. Meiteis means mei-people, tei- different. Hinduism came to Manipur in the 18th century, which became the state religion. The tribal population in the hills remained more or less influenced by the process of mass proselytism of the Meiteis into Vaishnavism. About a century later, i.e. the latter part of the 19th century, Christianity began to enter the tribal belt of Manipur and began its conversion of the tribal population into Christianity.

A major example of social distance prevalent since the Pre- Hindu to Hindu period was between the meiteis of the valley and the tribals of the hills. Cultural and linguistic difference coupled with geographical isolation and political conditions between the two groups were responsible for the distance which became wider than when the Meiteis became Hindus.
The people of Manipur follow several faiths and religions which can be traced down to its unique historical past. Sanamahism is an ancient indigenous religion, rich in mythology and colorful in ritual. The Sanamahi worship is concentrated around the Sun God/Sanamahi. Early Manipuris were the devotees of a Supreme deity.
"Lainingthou Soralel" following the footprint of their godly ancestors. That particular kind of ancestor worship and animism, with the central focus of worship on Umang Lai – that is, ethnic governing deities worshipped in sacred groves. Some of the gods (Lais) Manipuris worship are Atiya Sidaba, Pakhangba, Sanamahi, Leimaren, Oknarel, Panganba, Thangjing, Marjing, Wangbaren, Koubru. The religious life of the people, even when they adopted non-mainstream Hinduism, retained many characteristics inherited from their prehistoric ancestors. The essentials of this religion remain recognizable to the present day. Hinduism has an ancient presence in Manipur, (Ningombam, 2010) but did not win wide spread adoption until relative recent history. It was in the 15th century that a particular form of Vaisnavism was adopted and spread under the reign of King Kyamba through to King Khagemba in the 19th century. Towards the end of the 19th century and at the advent of the 20th century, a great force of Gaudiya Vaishnavism came and spread in Manipur. Over the last couple of decades there has been a revival of Sanamahi religion and this was evident in the significant growth of the "non-mainstream" religion category in the 2001 census which amounted to 17% of the population. According to the 2001 census Hinduism is identified with 47% of the population (Census, 2001).

Christianity came to Manipur in the early part of the 20th century. The American Baptist Mission Society was allowed to work among the Tangkhuls of Ukhrul district as early as 1896. Twelve young men were first baptized in 1901 by Rev. W. Pettigrew. It was followed by the opening of other centers and arrival of other missionary groups in various areas of the hills of Manipur. Roman Catholic Mission also joined the movement a little later and is now associated with the starting of various schools all over the valley and the hills. More than 70 percent of the entire populations in the hills have now adopted Christianity. The British system of education along with the modernization process has now opened the eye of the educated old and young men to the world of science and the spirit of inquiry and investigation.
2.7 Chiru: The population under study

The Chiru population, on which the present study is conducted, represents one of the 33 recognised scheduled tribes of Manipur. Chiru are mainly found in the districts of Tamenglong, Churachandpur and Senapati. They are widely distributed in 12 villages of the said three districts of Manipur. They are also found to be the inhabitants outside the states of Manipur. According to the oral tradition and beliefs, Chirus settled for the first time at a place named “aikhopui”. This place is belongs to china and later on moved to Wanglewaisu. Likewise, they kept on moving to different places in search of a successful settlement place. The places which they passed and settled for some period to reach the present area include Chiburam, Kambibung, Anganglon, Khongjang, Khunjao and these places are part of Tripura and Assam states through Jiri regions. The exact timing for their migration to Manipur is not yet confirmed but the old aged folks of Chiru believed that settlement started since 10 B.C (Chiru Tribal Union). However, the Royal Chronicles of Manipur mentioned that in 1554, King Meidingu Chalamba defeated the Chirus. This means that they might have been settled before this period. Again in the Manipur chronicle, the Chiru and Anal are mentioned as early as the middle of the sixteenth century, while the Anal make their first appearance in 1723. They are said to have come from Tipperah (now Tripura) (Shakespear 1912). An incidence of Meitei king’s incursion on a Chiru village of Nungsai (mistakenly recorded as Kabui village) occurred on 22nd day of wakehing (December-January) 1729 during the reign of maharaja Garibniwaz (Cheitharol Kumbaba 1989:90). As regards their probable course of migration, Shakespeare pointed out that the Chiru claim their migration from a place called, “Hranglal hill far
away in the south” and claim their descent from Rezar, the son of Chongthu, the ancestor of the clan of that name, which is still found in the Lushai hills whose name also appears in the thadou pedigree. There is a story associated with the Chirus of Kangchup who are considered as the first Chiru settlers in Manipur. The groups of people migrated from aikhopao after reaching Tripura and Assam sent the Kangchup Chiru group to find the feasibility of settlement in Manipur. Acquainted with the rich resources and pleasant environment they started settling in the Tamenglong region without even informing the other groups who were waiting for their response. Later on, the remaining group found that they have already settled and established for their own and from this incident they have been called Tere, those who settled stealthily. The Tere group moved from one village to other villages till the Iyie river. Then, they settled on the top of the Kangchup hills during the British period and moved down the hill at ragairong as well as khuman. The Chiru are linguistically classified as a branch of the old kuki. Earlier, writers considered the Chiru as a link between the Naga and the Kuki. Brown regarded them as a Naga tribe (1874 in Sanajaoba, 1995:45). Shakespear (1912) classified them as a distinct branch of the old Kuki. Bose (1934) observed that their manners, customs, language and traditions are definitely of Kuki origin but the characteristics which had misled some of the earlier authors, are their physique, habits, hairstyle and bachelors’ quarters which seem to resemble the Naga way of life.

**Table 2.1:** Chiru Population in Manipur, 1961-2001

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Year</th>
<th>No. persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1961</td>
<td>1809</td>
</tr>
<tr>
<td>2</td>
<td>1971</td>
<td>2785</td>
</tr>
<tr>
<td>3</td>
<td>1981</td>
<td>3743</td>
</tr>
<tr>
<td>4</td>
<td>1991</td>
<td>6032</td>
</tr>
<tr>
<td>5</td>
<td>2001</td>
<td>5487</td>
</tr>
</tbody>
</table>
2.7.1 Natural Setting

The Chiru villages are located either in the hills or at the foothills areas. Excepting for a few villages like Dolang and Lamdangmei, all the remaining Chiru villages are at the foothill regions. They are mainly concentrated in the Senapati, Tamenglong and Bishnupur Districts of Manipur. The closest Chiru villages to Imphal are Uran Chiru, Kangchup Chiru and Waithou Chiru. The Chiru villages, districts and distances from Imphal, capital of Manipur are given below.

Table 2.2: Distribution of Chiru population in different districts of Manipur and distance from Imphal City

<table>
<thead>
<tr>
<th>S L</th>
<th>Name of the Village</th>
<th>District</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bungte Chiru</td>
<td>Senapati</td>
<td>23 km</td>
</tr>
<tr>
<td>2</td>
<td>Bungte Khullen</td>
<td>Senapati</td>
<td>24 km</td>
</tr>
<tr>
<td>3</td>
<td>Charoi Khullen</td>
<td>Chrachandpur</td>
<td>45 km</td>
</tr>
<tr>
<td>4</td>
<td>Dolan</td>
<td>Tamenglong</td>
<td>55 km</td>
</tr>
<tr>
<td>5</td>
<td>Dolang khunou</td>
<td>Senapati</td>
<td>40 km</td>
</tr>
<tr>
<td>6</td>
<td>Kangchup Chiru</td>
<td>Senapati</td>
<td>18 km</td>
</tr>
<tr>
<td>7</td>
<td>Sadhu Chiru</td>
<td>Senapati</td>
<td>24 km</td>
</tr>
<tr>
<td>8</td>
<td>Nungsai Chiru</td>
<td>Senapati</td>
<td>28 km</td>
</tr>
<tr>
<td>9</td>
<td>Lamdangmei</td>
<td>Tamenglong</td>
<td>60 km</td>
</tr>
<tr>
<td>10</td>
<td>Thangjing Chiru</td>
<td>Senapati</td>
<td>17 km</td>
</tr>
<tr>
<td>11</td>
<td>Uran Chiru</td>
<td>Senapati</td>
<td>15 km</td>
</tr>
<tr>
<td>12</td>
<td>Waithou Chiru</td>
<td>Senapati</td>
<td>15 km</td>
</tr>
</tbody>
</table>

2.7.2 Language

The Chiru speak a dialect of “Old kuki” group. Grierson (1967) puts Chiru under “Old kuki” language along with Rangkhol, Bete, Hallam, Langrong, Aimol, Kolmen, Kom, Cha, Hmar, Anal, Hiroi Lamgang and Purum. He further remarks, “All these
are mere dialects of one language, which may be called by the customary name of old kuki and it is closely related to the central chin language” (Grierson, 1967).

2.7.3 Transport and communication

Manipur always suffered from lack of transport facilities, as roads are the only means of transportation in all the parts of Manipur. The construction of all season roads between a village and a city promises many changes in the village. A road facilitates in the transportation of heavy loads between the village and the market centres thereby helping in the construction of new village. When such a road is absent, the village suffers from many disadvantages. In such a situation the products of the village cannot reach at markets, and also the villagers cannot reach important offices or places of work in the right time.

The few Chiru villages of Manipur which have good road communication are Nungsai, Charoi Khullen and Waithou. The remaining villages still do not have good communication facilities. In all such villages, the paths or trails which connects the village with the metalled road still requires broadening and metalling. There are many more villages where even two-wheeler cannot reach, as they are not connected through metalled road other then footpaths.
2.7.4 Chiru House

The dwelling of Chiru houses normally face any convenient direction according to the topography of the settlement except west. The size of the house is measured in terms of fathom lams. As a tradition, the Chirus do not construct a house having a square ground space. The length or the breadth of the house would be at least a fraction of lams, for instance, a little more than 8 lams. The dimension of the structure depends on the means of family. The floor is made of beaten earth and the ground plain is rectangular. The members of the household sit around the fire to settle the shape, size and dimension of the proposed house. At present, separate houses having beds and fire place are built. A structure without a fireplace is believed to be incomplete.

2.7.5 Construction of House

For construction of a dwelling house a Chiru man determines the atmosphere of the area suitable for house construction. For this purpose Chiru man erects a pillar and stays by its side till midnight. If the area is cool, it is good; in case of warm the area is unsuitable. To start the construction of a house, the main pillar is erected. For this a hole is dug in the foundation and a ritual function of ‘yupan’ is performed with ‘waiyu’ (type of wine). The erection of pillar is known to the Chirus as Chapuiiphun. After performing the ritual of erection of a pillar the house is constructed collectively by the villagers on the request of house owner in a day or so. After completion of house construction, the ritual of entrance is performed. In this ritual, the meat of dog (and meat of other additional animal if they can serve) is enjoyed. This ceremony allows the members of the family to occupy the house and make a living.

The house consists of a spacious portico. On the wall wooden hooks to hold the beams of loom are attached. Place of pounding is located on the right side of the portico. There are two doors, one front and another back door. These doors are located on the left and the middle of the house and near it is found the fire place. Above the fire place, a hanging platform made of bamboo on which, materials of day-to-day are stored. Granaries are built separately. It is a large store bin made of bamboo splits where paddy collected in a season is stored for day-to day use. The Chiru household is a close-knit family unit. It is either an extended or a nuclear
family. A household consists of a male, his wife and their unmarried children. Generally the eldest son continues to reside with the parents. Other sons move out after marriage and establish a separate household. After the death of the father the eldest son inherits the house and becomes the head of the household. Women cannot inherit parental property.

2.7.6 Agriculture

Land is the Chiru’s main resource. They practice both wet and shifting cultivation. Most of the Chiru tribes have adopted farming as their major profession. The rugged terrains of the mountains prove to be just perfect for doing shifting and wet farming. The plots in the hills are utilised for shifting cultivation with possessory rights by individual villagers. Chiru tribal community is also involved in the growth and trading of fruits like bananas, oranges, lemon and papaya. These fruits do not only serve their food requirements but also help them to earn. The Chiru villages are noted for its good production of green leafy vegetables which regularly go to Imphal market.

They grow generally onion, pea, mustard, cabbage, purkia roxburgii locally called as yongchak. In
Chapter 2

Materials and Methods

Demographic study with special reference to reproductive and child health among Chiru tribe of Manipur

Manipur, *yongchak* is widely consumed by all the indigenous population. It is also a booming cash crop too. Particularly in Charoi Khullen (village of Chiru) every household earns some income out of the sale of *yongchak*. Majority of them grow maize, sweet potato as their cash crops. In some villages growing of pineapple on the hill slopes around their settlement area is also found. This is a good source of income for every household of Waithou and Kangchup Chiru villages. In addition, the Chiru tribes of Manipur are also known to specialise in cottage industries. The Chiru prepare a range of household products from cane.

People of the Chiru tribal community also display great craftsmanship in the field of weaving and carpentry. In a nutshell, Chiru tribe has greatly contributed in enriching the cultural ethnicity of whole of Manipur in northeastern India. At present some of them are engaged in government service.

Women play an important role in agricultural work, collection of firewood, and fetching water for drinking and household uses. They practise both shifting and wet cultivation. Fruits like banana, orange, lemon, and papaya are grown for family consumption and market trading. The main cottage industries are basket and cane works, weaving, carpentary and
manufacture of musical instruments. Their numbers are about 5,487 persons (2001 census).

2.7.7 Hunting

Hunting is also common in Chirus community. In some villages (Dolang, Lamdamei, Uran) which are in dense hilly area they still practise hunting. Hunting is carried on by using guns and spears. Their environment still provided animals like deer, fox and birds. Charging on the dogs, the expected game is pursued to get into more open ground so that the hunting man could easily overpower the hunted animal.

2.7.8 Fishing

Fishing is not practised as a profession by the Chiru in most cases. However, whenever they get chance, they catch fishes for only home consumption. They use traps for catching fish from rivers and streams.

2.7.9 Weaving

Among Chirus, only women weave for both sexes. Chiru women only use loin looms. Earlier cotton threads were the only material used for weaving but at present cotton is not the sole fibre for weaving. In weaving, the woof is either put into shuttle or not i.e. sometimes weft is only woven with the thread rolled on the spool.

2.7.10 Dress and Ornaments

Traditionally men wore a piece of loin-cloth (Der). It is worn round the loin, either the two ends or one of the ends being allowed to dangle loosely in front. During festive occasions and at the time of dancing, Chiru men wear another piece of cloth. It is folded in such a manner that its breadth is reduced while the length remains as it
is, it is then wrapped round the torso passing over the left shoulder and the two ends are brought on the right side of the waist, make a loose knot and allowed to hang freely on the right side. This piece of cloth is called puonhaiba by the Chirus. Chiru men also wear turban called (lukai). At present men wear western dresses such as trousers, shirts, coats, shoes. In the past, Chiru women never wore blouse. Traditional dress of Chiru women includes- upper cloth/shawl called as ponja; lower garment- i) Hong ponje ii) Senbol ponje and iii) waist band - khongchit.

**Shawl/ponja:** The warp of the cloth is white whereas the weft is of multicolour-black, pink, red, etc. the breadth of the cloth is attained by sewing two pieces length wise. This is used to wrap their upper body.

**Lower garment (Hong ponje):** it covers their bodies from bosom upto calf. They drape round their bodies and one end of the cloth is tucked in under armpits. The popular design of this cloth is arsi (star) and sakmaru (cucumber seed). Nowadays Chiru weavers produce this cloth in various colours.

**Waist band (Khongchit):** it is of colours like red, black are woven in the white background. The peculiarity of the cloth is that the fringe of warp and extra weft for yielding designs remain free on the sides of the cloth. It is tied above the lower garment at the waist as belt.

As ornament of Chiru women adorn themselves with brass articles such as wrist bracelet (Har bulo). They enjoy the pride of beauty of ruthipui (beads of red colour) round their necks. They also decorated with bahangmo (peacock feather) on their head.

At present Chiru women wears blouse, shawl, skirts, pants etc. Besides, phanek, a lower garment of Meitei and only produced by Meitei weavers, is a commonly used working garment of the Chiru women.

### 2.7.11 Dormitory

When the boys are able to help the parents they will be enrolled to the village dormitory (bachelor’s ball) known as the Sher-in. The sher-in is a large house which
Chapter 2

Materials and Methods

Demographic study with special reference to reproductive and child health among Chiru tribe of Manipur

is different from the other ordinary houses by the presence of a bamboo platform made on a large wooden beams as well as a large window on the back wall.

The dormitory or Sher-in among the Chiru is meant for the menfolk, especially for bachelors known as Sheraja. Women are strictly prohibited to enter the Sher-in. It is the place where many important festivals are held and it also serves as a meeting place for the menfolk. All the bachelors or Sheraja spend most of their leisure time at the Sher-in and it also serves as a sleeping place until they are married. They, however, take their meals at their respective houses. Generally all the bachelors work in the daytime either at their father’s field or for the parents of the fiance’s since marriage by service is common among the Chiru. Occasionally all the members of the dormitory assist others for the benefit of the Sher-in. they also function as the work force at the time of festivals.

After marriage, all the married have to serve as tangwa (chowkidar) at least for three years. Three to four tangwas are selected from among the married men. The duty of tangwa is guarding of the dormitory, messenger, attendant, cook, clean, etc. they take part in any religious ceremony or festivals of the village. Though the Chiru dormitory organisation has already died out they still continue to select tangwa. They now serve the village with the village authority.

2.7.12 Clans /exogamous groups

The Chiru are divided into five exogamous groups or clans. Earlier they had seven clans according to Chiru elders, but at present only five are available i.e., Danla, Rezar, Chongdur, Shampar and Dingthoi. This is not a new phenomenon. In this respect Bose (1980) made the following remarks, “The Chirus are divided into five exogamous groups or clans- Danla, Rezar, Chongdur, Shampar and Dingthoi. Of these the position of the Danla class is the superior to the rest. This clan is also known as the Royal clan and the headman of the village generally comes from this group. But nowadays this rule has been slackened and any able man can occupy this position. Next in importance is Rezar or Raza clan from which the assistant headman is generally chosen. All other clans are on the same footing” (Bose 1980).
clans are basically exogamous and sometimes associated with some traditional social duties.

**Table 2.3:** Clans and Sub-Clans of Chiru Tribe as approved by the Chiru Tribal Union

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<tbody>
<tr>
<td>1</td>
<td>Laino</td>
<td>Kongsong</td>
<td>Kang-in</td>
<td>Intu</td>
<td>Duroi</td>
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<tr>
<td>2</td>
<td>Neeikhum</td>
<td>Khorok</td>
<td>Jachi</td>
<td>Jachar</td>
<td>Durtak</td>
</tr>
<tr>
<td>3</td>
<td>Popa</td>
<td>Mechek</td>
<td>Rangsong</td>
<td>Jagin</td>
<td>Khomeleen</td>
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<tr>
<td>4</td>
<td>Thanga</td>
<td>Partak</td>
<td>Sekho</td>
<td>Japui</td>
<td>Durtoi</td>
</tr>
<tr>
<td>5</td>
<td>Thangleen</td>
<td>Samu</td>
<td>Surkeng</td>
<td>Jatak</td>
<td>Misin</td>
</tr>
<tr>
<td>6</td>
<td>Tubung</td>
<td>Tubur</td>
<td>Siling</td>
<td>Jatung</td>
<td>Rakha</td>
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<tr>
<td>7</td>
<td>Tuithui</td>
<td>Tuithui</td>
<td>Thoiroi</td>
<td>Kawr</td>
<td>Sesothang</td>
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<tr>
<td>8</td>
<td></td>
<td></td>
<td>Thoitak</td>
<td>Sevan</td>
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<td>9</td>
<td></td>
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<td>Neeisompu</td>
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<td>10</td>
<td></td>
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<td></td>
<td>Rumun</td>
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### 2.7.13 Marriage

Marriage has been traditionally a social contract among the Chirus. With the coming of Christianity religious role becomes very prominent. The Chiru traditionally practised “marriage by service”. As a rule a man renders his service to the family or father’s field of that girl. Thus “when marriage is by service, it is only natural that the actual ceremony should be of little importance, for the couple has been living as man and wife during the whole time” (Shakespear, 1912).
A Chiru marriage is generally arranged by the parents. Selection of one’s cross-cousin (maternal uncle’s daughter) is encouraged and considered a good alliance. If no such mate is available then he may marry another girl from his maternal uncle’s clan. Marriage with the paternal aunt’s daughter is forbidden. Clan consideration also plays an important role in a Chiru Marriage. This is confirmed by Shakespear who wrote that, “The Chiru and Chothe customs are alike, not only is a young Man’s Choice limited to some family of the clan other than his own, but the actual families which he may choose his bride are strictly fixed. Among the Chiru-

- A Danla boy may marry a Dingthoi or Shampar girl
- A Dingthoi boy may marry a Chongdur or Danla girl.
- A Rezar boy may marry a Dingthoi or Shampar girl.
- A Shampar boy may marry a Danla girl
- A Chongdur boy may marry a Danla girl. (Shakespear, 1912)

Usually for marriage negotiations the boy’s parents go to the girl’s residence with a jar of wine and present a formal proposal. If the girl’s parents agree, the boy goes to stay with the future father-in-law’s house for a period of three years. After completion of this period his parents come to take their son back. A ceremony takes place at the girl’s father. In this ceremony the boy’s parents give a piece of cloth and a jar of wine to the girl’s father. After the ceremony the boy returns to his natal home with his wife. This is known as the bride’s coming. Bride price is commonly paid in both cash and kind. There is no special symbol of marriage. But at present there have been some modifications as well as relaxations regarding the selection of a bride. Nowadays, after imbibing Christianity; marriage is solemnized in the church by a pastor with the bride wearing western style white gown, with bridegroom having a best man and the bride having a bridesmaid beside her. With the preaching of the Christian missionaries the usual practice of marriage arrangements by parents is gradually disappearing and the girl’s and boy’s consent are becoming a deciding factor.

Divorce is permissible but is rare. Reasons for divorce are adultery, being barren and impotency. Both husband and wife have right to divorce. If the children are very
young at the time of the divorce, they stay with the mother. Widow and widower remarriage is permissible.

2.7.14 Dietary habits

Rice is the staple food of Chiru. The meat and fish is common in Chiru. They prepare meat and fish which is either cooked with or without edible oil. When oil is not in use, the meat is stewed for sufficiently long time. The meat of pork, beef and even of chicken is cooked in this way. The vegetable curries are also quite commonly consumed. Many vegetables like, mustard leaves, cabbage, cauliflower, beans, pulses, etc. are taken by them. The processed vegetables are boiled with water along with other ingredients like chilli, salt and some dried fish or meat. Consuming of milk and milk products is found to be very rare.

Traditionally chewed rice is fed to the child by mother after a few days of the birth of a child till the eruption of teeth. The mother does not observe restriction on the consumption of fish, meat or any vegetable during lactation period.

2.7.15 Religion

Almost all the Chirus of Manipur are Christian by religion. They imbibed Christianity through association with other Christian tribals. In the process of conversion to Christianity they have given up almost all their traditional religious beliefs and practices. The village religious practitioner thempu is no longer important as he has no role to play in the new religious system. New religious practitioner like the pastor and deacons are more important and prestigious in each village. In this new religious setting, pastor-hood is not attained by chances; it is attained by long process of training. Thus religious functionaries are no longer hereditary. The Chirus mostly belong to Baptist denomination.
2.7.16 Festivals

The Chirus used to performed many festivals which were closely associated with the different stages of cultivations. Some such festivals were Sanghoi festival held during summer. This festival was performed in order to protect the standing crops from the destruction by the pests and insects. Other harvesting festivals were Rathekla hong, Ratha-Mochun, Rempui-Rente, etc. These festivals are celebrated during harvesting of paddy crops in the month of November and January-February. All these festivals have been given up after converting to Christianity. However, Chirus from every village gather and perform all the festivals (by clumping of festivals) for 4-5 days to preserve their traditional festivals. This is performed in any month (mostly in winter) of the year which is decided by heads/chiefs and authorities of the villages.

The major festivals of the Christian Chirus include Christmas, New Years Day, Good Friday and Easter, etc. The celebration of Christmas and New Year’s Day coincide with the lean agricultural season. It falls within the period which is completely free from all agricultural activities. Generally, Christmas is the greatest and most important festival of all the Christians of Manipur marking the birth of Jesus Christ in Bethlehem on this day of December 25. Depending upon the spirit, the festival may last till January 1 on which the New Years day is also observed. Prayers, reading of Gospels, eating, singing of hymns, lectures on Christ, sports etc., form the major part of the festival. This is the most enjoyable period of the Year. The nature of celebrating this festival is almost one and the same in all the Chiru villages.
2.7.17 Educational Facilities

Most of the Chiru villages have facilities for primary education although only few villages have facilities for upto middle school level. Therefore, for higher studies they make use of the facilities available in and around nearby town. Although better amenities for education are not available in all the Chiru villages, the enthusiastic parents send their children to various places for standard education. Many Chiru students study at various schools/colleges in Imphal. Even some parents send their children outside the state for higher education.

2.7.18 Source of Drinking water

Chiru have been depending on the hill stream or fountain in meeting their daily requirement of fresh water. Since many Chiru villages are settled at the foothills, they have sometimes depended on the perennial sources of water like river/pond. Under the government scheme, pipe water is made available at many Chiru villages. For example, the village of Bungte gets pipe water inside the residential area. Similarly the village of Uran Chiru receives raw water through PVC pipes (lying of pipe and construction of reservoir was executed by the Tribal Development Deptt. with the initiative of former Chiru Leader Alar Thoitak in 1982). But still in some Chiru villages, villagers live on stream and spring water.

2.7.19 Health facilities

Most of the Chiru people are becoming aware of modern medicine and available health facilities. However there are still many villages where no PHC or dispensary is available. Majority of the Chiru villages are not within easy reach of any well-equipped hospital. In order to help people in such remote villages, government, NGOs and Christianity plays a very important role by abstaining from the use of drugs, alcohol and making them aware of the health, hygienic programme, etc, introducing many other alternatives to support their life. Government provide them one PHC or sub center for each 1,000 person and medicines at the rate of Rs. 12,000 per PHC in a year and Rs. 2,000 per sub center along with many awareness camps, distributing poster, pamphlet etc, and making them aware of their health right. It varies from
valleys and hills. The valley people have better medical facilities as compared to hilly area where few numbers of PHC and hospitals are available. To them a person is considered sick when he/she cannot move out of bed because of disease and physical weakness. Usually for any problem they are habituated to buy medicine as per their own idea without any prescription from doctors or trained health workers.

It may be mentioned here that the traditionally Chiru had many ethno-medicinal knowledge with which they cured their illnesses. With the coming of Christianity they have given up the earlier techniques of curing diseases through divination and other magico-religious practices and application of herbal medicines.

Health Infrastructure in Manipur: The Health and Family Welfare Department of the State provides services such as public health, control of communicable diseases, health education, family welfare and maternal and child health care. The state has the following hospitals and health centres (Annual Administrative Report, 2010-2011)-

- Regional institute-1
- State general hospital-1
- State TB centre-1
- State leprosy hospital-1
- General district hospitals-7
- Community health centres-16
- Urban health centres-2
- Primary health centres-73
- Health sub centres-420
- Medical dispensaries-20
- Dispensaries-22
- TB units-9
- Drug de-addiction centres-12
- Leprosy units-4
- AYUSH-6

Under central government

Functioning under health department, Manipur

Under autonomous district council,

RNTCP

Attached to state and district
However, the mere existence of health infrastructure has no necessary correlation with the accessibility and quality of services provided and the changes in the existing health situation and/or the current morbidity burden of the population.

2.7.20 Sanitation system

Toilets are considered an indicator of the social status and the economic background of the society. Proper toilet facilities are very important health factors as most of the diseases are borne from open field or kachcha type of toilets. The Chiru tribe of Manipur has different types of toilet from open fields to septic toilet types depending on their economic condition of the household as well as the space available. In urban areas of Imphal valley, most of the households have more septic toilets as compared to kachcha toilets. About 10% households are without toilets because of poor economic condition and limited space. In rural areas, it is opposite of urban setting. Most of the toilets are of kachcha/semi cover type, very few of septic toilet systems. But they are becoming more and more aware about the necessity of a septic toilet as well as the use of toilet soap, chemical etc. regularly.

2.7.21 Right of inheritance

The Chiru are patrilineal and patrilocal. The property of the Chiru includes the land for cultivation and the house and other household materials. In some villages the parental property is inharited by the youngest son who looks after the aged parents and they further said that the sons get equal share of the parental property. And another is that parental parental property is distributed equally to all the sons except of that the major share goes to the eldest son. Thus the Chiru inheritance of property is both primogeniture as well as Ultimogeniture. This variation may be due to influence of which the community endured in the course of their adaptation to the surrounding cultural milieu. Traditionally, woman has no rights on any kind of property of the parents whether it is movable or immovable. Sometimes daughters receive some property at the time of their marriage in the form bride wealth. Some parents may give yongchak (purkia roxburgii) plant but no agricultural land.
2.7.22 Women’s role in economic activities

Chiru women play a very important role in economic status. They take a major role though there is no sex differentiation in agricultural activities with the exception of ploughing. Most of the women are actively engaged regularly in horticultural activities as well as in cultivation. Women go to the field daily tending it since their day to day expenses and household consumption are met from the horticultural products. Besides, other vegetables and fruits are cultivated; selling of these products is also done solely by the woman.

Women’s role in household: Most of the household works are done by women. But there is no rule that washing, cooking etc. should be done only by women. It depends upon the availability of time. However, if the women are free it is their duty. Many housewives go to Bazar for selling agricultural products in the early morning and return by evening while the husband has to cook, take care of their children. So, in terms of household management the Chiru are liberal.

2.7.23 Women’s role in religious activities

Traditionally participation of women in any of the religious activities is strictly prohibited. They are simply spectators even the making of offerings to the god is strictly restricted. However, Christianity has brought about profound changes in this regard. Among the Chiru women are not allowed to participate in decision making or give comment. Today through the impact of Christianity many women have come forward to organise women’s association for their welfare as well as for the village. However there is not a single woman among the present members of the village authority despite the fact that no restriction is imposed on their taking part in the village authority according to the government rules. Thus, it appears that the Chiru women are in comparatively lower status. In every villages of Chiru there are women’s self-help group of (groups of 30-40) married women. Every members should have to contribute ₹ 50-100/- in every Sunday. This money will be used in women’s and village’s welfare.
2.8 Sample and Data Collection Techniques

The present study is mainly confined to hill areas as Chiru are resided in hilly region. The study area of the Chiru tribe is Senapati district and Tamenglong district. An attempt was made to contact the maximum number of households living therein covering the entire village. The objective of the present study was explained to its members so as to develop a sense of involvement and to obtain their maximum cooperation in the collection of data. The study design included two phases of field work: a pilot survey, which has been followed by the field work.

2.8.1 Pilot survey

A pilot survey is invariably essential for demarcating the precise geographical area of the population proposed to be studied, its distribution and the feasibility of the study. In addition to this the establishment of a good rapport which is an essential part of any field investigation for a better understanding between the people and the researcher which makes data collection easy and also increase the authencity of the data collection. For the establishment of rapport in the present study the authorities of the district as well as the villages were approached and general information was taken.

The pilot survey has been conducted from April to June 2009. The main objective was to identify the area for conducting the fieldwork and also to establish a rapport with the villagers. It was not easy task to conduct field work in hilly areas especially tribal population residing in the hilly regions because of Manipur political situation. Therefore, we have met the village representatives and explained the purpose of the present study. All necessary permissions were obtained from the concerned authorities in the study area. Key informants for each village were identified for the smooth conducting of fieldwork. The Chiru villages are situated at a distance ranging from 10-60 kilometers from the Imphal, capital of Manipur and the size of the villages comprises 30-200 households. Some of the houses could not be surveyed, because of the unwillingness of eligible women to cooperate. Those households were excluded from the study; in that case the respondent did not give information.
2.8.2 Field work

The first fieldwork was conducted from Aug 2009 to November 2009 where an attempt has been made to cover the population groups under study. The districts visited during this period mainly in Senapati district according to the distribution of the presently studied populations in the state. The rapport establishment was made with the population groups by seeking cooperation from various local authorities such as the Judicial Magistrates of the districts, the Chiru Tribal Union, the Village Heads, and Social Activists etc. of the region. In this phase, about 120 ever married women in the reproductive age group of 15-49 years were interviewed from the selected villages by using an exhaustive demographic schedule. In the light of the pilot survey the pre-tested preliminary schedule was modified in view of its short comings and modified schedule is attached with the thesis.

The second fieldwork was conducted in May 2010 to Aug 2010. In this phase the 494 households and 520 ever married women interview schedules were collected from ever married women.

The interview with the respondents was conducted in presence of one or other family members perhaps social events, age of ego and age of child was considered for cross-examine the statement given by the respondents.

2.8.3 Formulation of research schedule

Keeping in view the specific objectives and nature of the present study, a detailed interview schedule was framed for a comprehensive study of the concerned population. It included both closed and open-ended questions. While the open ended questions were designed to record free answers, the closed ended questions were pre-coded, with fixed response categories. The schedule was designed considering all practical and theoretical aspects, and questions were worded in such a way so as to elicit the required information, both current and retrospective, completely and accurately. Cross questions were also included for this purpose. The entire schedule has been categorized into two broad headings namely household schedule and
women’s schedule. The household schedule consist of questions on household identification, economic status, and queries related to each household member i.e. age, sex, marital status, education, occupation and relationship to the head of the household. The household schedule also included information on all the live births and deaths which took place within the last six years in the household. The ever married women’s schedule comprised of relevant questions on reproductive history, vital events, family planning, antenatal and postnatal care, child vaccination, disease profile, healthcare awareness, availability of health amenities and nutrition, etc. Data on dietary habits, social restrictions during pregnancy, feeding practices and beliefs and taboos pertaining to health and disease has also been included. All these parameters in the schedule were kept subject to pretesting and modification following the pilot study. The entry of data in the scheduled was started only when the respondent was fully confident. All the parameters or indexes are arranged are discussed as follows:

1. General information:
   - Full address
   - Religion
   - Hospital or dispensary
   - Facility available like electricity, sources of drinking water, sanitation, irrigation, and developmental programme

2. Household composition:
   - Name
   - Relation with ego or respondent
   - Age, sex, marital status, educational status, occupation, monthly income, house type(mud or brick),
   - Family structure, clan, clan before marriage, social hierarchy, status of the women, birth, marriage, divorce, remarriage, role of women in political and social organizations
   - Occupation of each of the family members, income of the family and expenditure.
3. **Fertility:**
   - Age at menarche
   - Menstruation related problems
   - Age at marriage
   - Age at first conception, age at birth and result of the pregnancy
   - Age at menopause
   - Post menopause problems

4. **Reproductive and child health care:**
   **Ante-natal care**
   - Routine check-up during pregnancy
   - Preference of hospital (government or private)
   - Nearest dispensary or hospital
   - Type of delivery
   - Delivery attendant, breast feeding, immunization and weaning practices.

5. **Post natal care**
   - Routine check-up post delivery
   - Immunization and child vaccination
   - Supplementary diet
   - Breast feeding practices

6. **Mortality:**
   - Death record of last one year and causes of death
   - Still birth
   - Cause of death

7. **Family planning:**
   - Awareness of family planning programme
• Awareness of contraception
• Method adopted both husband and wife
• Problem faced
• Abortion method
• Preference of son or daughter
• Ideal number of son and daughter

8. RTIs/STIs
• Knowledge of RTIs/STIs and sources of information
• Symptoms of RTIs/STIs
• Duration of symptoms

In the present study, a total of six hundred and fourteen (614) households have been covered from the selected villages. These selected areas are mostly inhabited by Chiru tribes. The main focus of the interview was the ever married women in the reproductive age group of 15-49 years. Some of the houses could not be surveyed, because, of the unwillingness of eligible women to cooperate. Those households were also excluded from the study, in whose case the respondent did not give complete information.

2.8.4 Anthropometric measurements

Anthropometric measurements of weight and height of 172 boys and 150 girls, age through 4-12 years and 557 ever married women were taken as per the IBP recommendation. Investigator herself collected all the measurements to avoid the inter observer error, and for maintaining uniformity and accuracy in techniques. Anthropometer was used to measure height of the boys and girls. The reading was taken to the nearest 0.1mm, and weighing machine was used to weigh the children and women wearing minimum clothing and it was recorded to the nearest 0.5 kg.
2.9  Analysis of Demographic Data

Demographic data were analyzed using various demographic and statistical methods and formulae to obtain a detail demographic profile of the population studied. The term statistics refer to the principles and scientific methods used for handling numerical data. Statistical methods facilitate the interpretation of numerical data derived from a sample. Data are systematic aggregate of facts, which are numerically expressible, measurable and comparable. However data in their original form are so huge and complex that they do not give a clear picture of the situation. Meaningful interpretation of such data is possible only if the data is treated statistically to obtain proper information. Statistical methods thus, enable us to collect, organize, present, analyze and interpret the quantitative data obtained in anthropological and various other studies, and accordingly arrive at a definite inference. The data collected during the present field study was processed and analyzed using Microsoft –Excel. The data was statistically treated and statistical analysis included descriptive, namely, the mean, median and standard deviation in addition to percentages.

The data collected was evaluated using various demographic indices such as Sex ratio, Crude birth rate, Crude Death Rate, Infant Mortality Rate, etc. and other socio-demographic measures to investigate population composition, fertility, mortality, and family planning status, besides the level of reproductive and child health status was also evaluated. It is also essential to use various demographic concepts such as marriage, fertility, parity, reproductive span, foetal death, still birth, live birth, infant death, migration, etc carefully and uniformly.

These measurements are given below.

2.9.1 Measures of sex ratio

The sex ratio is one of the simple but most powerful ratios in population study. It is defined as the number of females in the population per 100 or 1000 males. It is an important and most widely used measure of sex composition in a population. It is generally used for comparison between different populations. Any changes in the sex
ratio reflect the changes in the composition of the population. In the present study sex ratio is calculated as:

\[
\text{Sex Ratio} = \frac{\text{Number of Female}}{\text{Number of Male}} \times 1000
\]

### 2.9.2 Dependency Ratio

The dependency ratio relates the number of children (0-14 years old) and older persons (60 years or over) to the working-age group in the population (15-59 years old). It is measured as:

\[
\text{Total Dependency Ratio} = \frac{\text{Individuals Aged Below 15 Years + 60 Years and above}}{\text{Individuals at the Age between 15 to 59 years}} \times 100
\]

*The dependency ratio can be disaggregated into two:*

The youth dependency ratio, which is the number of children aged 0-14 per 100 persons aged 15-59 years.

\[
\text{Young Dependency Ratio} = \frac{\text{Individuals Aged below 15 years}}{\text{Individuals at the Age between 15 to 59 years}} \times 100
\]

The old-age dependency ratio, which is the number of persons aged 60 or over per 100 persons aged 15-59. The dependency ratio, also referred to as total dependency ratio, is the sum of the youth and old-age dependency ratios.

\[
\text{Old Dependency Ratio} = \frac{\text{Individuals Aged 60 years and above}}{\text{Individuals at the Age between 15 to 59 years}} \times 100
\]

\[
\text{Index of Aging} = \frac{P_{60}}{P_{0-14}} \times K
\]

where, \(P_{0-14}\) is the population in the age group 0-14 years, \(P_{60}\) is the population in the age group 60 years and above,
The dependency ratio is an approximation to the ratio of net consumers to net producers. It is assumed that children under age 15 as well as persons aged 60 or over are economically dependent and persons aged 15-60 are economically active. By relating the group of the population most likely to be economically dependent (net consumers) to the group most likely to be economically active (net producers), changes in the dependency ratio provide an indication of the potential social support requirements resulting from changes in population age structures. In addition, the ratio highlights the potential dependency burden on workers and indicates the shifts in dependency from a situation in which children are dominant to one in which older persons outnumber children as the demographic transition advances (that is, the transition from high mortality and high fertility, to low mortality and low fertility). A high dependency ratio indicates that the economically active population and the overall economy face a greater burden to support and provide the social services needed by children and by older persons who are often economically dependent. A high youth dependency ratio, for instance, implies that higher investments need to be made in schooling and child-care.

2.9.3 Educational status

As a demographic characteristic, educational status in general is used as the degree of familiarity with culture and openness to new ideas and information on the part of individuals. At the same time, in this modern world its importance is in itself evident. In this sense, educational status has direct relevance for a wide array of concerns ranging from evaluation of fertility, mortality and other demographic events to the lists of human resources of societies and the possibility of systematic social change.

All the subjects who are able to read and write their mother tongue were considered as literates according to the definition given by UN (1967). The distribution of population age 5 years and above was calculated by dividing the population into different categories on the basis of their educational level.
2.9.4 Occupational Status

Occupational status provides major measure for any comparative analysis of the stage of economic development attained by different societies as well as it is an index of regional economic differentiation within a country. Distribution of population was calculated on the basis of occupational status. The activity of the individuals was recorded and classified into different categories. It is conventional to consider all those persons who are under 15 years and over 60 years as economically dependent on other members i.e. all those individuals, whose age ranges between 15-59 years are considered to be economically active (Thompson and Lewis, 1965)

\[
\text{Crude Activity Rate} = \frac{\text{Economically active population}}{\text{Total population}} \times 100
\]

\[
\text{General Activity Rate} = \frac{\text{Economically active population (aged 15 – 59)}}{\text{Total population (aged 15 – 59)}} \times 100
\]

2.9.5 Economic Status

Data regarding the income of the household from all sources was recorded and distribution of households on the basis of Per Capita Annual income was calculated.

\[
\text{PCAI} = \frac{\text{Total annual income of the households}}{\text{Total number of members in the household}}
\]

2.9.6 Fertility Rate

Fertility rate is an important aspect of human population study which so vitally influences and affects both administrators and planners. It is because increase in the fertility rate of the population has a strain on economic resources of the nation. There are many methods for measuring fertility rate. The following rates were calculated for studying the fertility-
2.9.6.1 Child-Woman Ratio (CWR)

It is measured as the ratio between the number of children of the age less than 5 years to the total number of women of reproductive age group multiplied by 1000.

\[ CWR = \frac{\text{Children Aged } 0-4 \text{ years}}{\text{Women in reproductive Age } (15-49 \text{year}) \times 1000} \]

Though it is easy method of finding out ratio, it is not very precise as an index of fertility. Its evidence is indirectly derived from the group of survivors, rather than from the number of actual births and thus it is affected by several other factors besides fertility alone.

2.9.6.2 Crude birth rate (CBR)

It is computed as the ratio of the total registered live births in a specific year in a particular area to the total mid-year population of that area multiplied by 1000.

\[ CBR = \frac{\text{Number of Live Birth During the Year}}{\text{Mid – Year Population}} \times 1000 \]

This is the most common and easily computed measure of fertility. However, it carries no implication as to why the birth rates are different in different years and between different populations at the same time. It also considered the total population while in no country the whole population can always be fertile.

2.9.6.3 General fertility rate (GFR)

This rate can be computed as the ratio of total live births in a specific year in a particular area to the number of women in the child-bearing age, multiplied by 1000.

\[ GFR = \frac{\text{Number of Live Birth During the Year}}{\text{Mid – Year Female Population in reproductive Age } (15-49 \text{year}) \times 1000} \]
Chapter 2

Materials and Methods

102

Demographic study with special reference to reproductive and child health among Chiru tribe of Manipur

Though this rate is more refined than the crude birth rate, it much be noted that it is not a very effective refinement, for it is related to all the women in the child-bearing age group. But it is well known that fecundity is not uniformly distributed.

2.9.6.4 Age specific fertility rate (ASFR)

This rate can be defined as the ratio of the number of live births to mothers of a specified age group in the population during a year to the number of mid-year female population in the same age group, multiplied by 1000.

\[
ASFR = \frac{\text{Number of Live Birth to Women at particular Age Group}}{\text{Mid – Year Women Population of the same age Group}} \times 1000
\]

Age specific fertility rates are not affected by any variations in age structure and therefore, these rates may be considered to be refined. However, when comparisons between two population groups have to be made, the entire procedure becomes rather cumbersome.

2.9.6.5 Total fertility rate (TFR)

Total fertility rate is the sum of the age specific fertility rates of women in each five-year age group from 15 to 44 or 49 years.

\[
TFR = \frac{\sum_{15-29}^{45-49} ASFR}{1000}
\]

This rate is a hypothetical rate indicating the total number of children that would ever be born to a (hypothetical) group of women, if the group passed through its reproductive life span with the same birth rates in each year of age. However, The Total Fertility Rate (TFR) is perhaps the most commonly used standardized fertility measure because it is ideal for comparative purposes and is a comprehensive summary measure readily understood, at least as a general concept.
2.9.7 Mortality Rate

The calculation of mortality rate is as important as fertility rate. However, collection of mortality data faces various problems as many of the death events are not registered. Mortality data should be given equal important as fertility. It is through this data that national health planner will be able to identify and make policies to prevent from various diseases. This also helps in projecting future population of the nation. There are many ways of calculating mortality rates. In the present study following rates were calculated for studying mortality –

2.9.7.1 Crude Death Rate (CDR)

It is a ratio of the total registered deaths of a specified year to the total mid-year population, multiplied by 1000.

\[ CDR = \frac{\text{Total Number of Deaths in the Year}}{\text{Mid-year Total Population}} \times 1000 \]

This is most simple and most commonly used measures for mortality. One of the greatest limitations of this method is that it does not consider the age of the population, while the mortality is largely different for different age groups.

2.9.7.2 Infant Mortality Rate (IMR)

This is the ratio of the number of Infant (0 to 1 year) deaths in a specific period of time in a particular area to the total number of live births occurred in that period of time in that particular area, multiplied by 1000.

\[ IMR = \frac{\text{Total Number of Infant Death in the Year}}{\text{Total Number of Live Birth in that Year}} \times 1000 \]

This rate is particularly used for comparing developing countries. The primary reason for this is that in developing countries infant mortality is still high. The infant mortality rate is often used to compare the living standards of countries. The higher the rate, the lower is the living standard in that country.
2.9.7.3 Pre-Natal Mortality Rate

\[
\text{Pre – Natal Mortality Rate} = \frac{\text{Number of Pre Natal Death during the Year}}{\text{Total Number of Conception during the same year}} \times 1000
\]

2.9.7.4 Pregnancy Wastage Rate

\[
\text{Pregnancy Wastage Rate} = \frac{\text{Number of Pregnancy Waste During the Year}}{\text{Total Number of Conception during the same Year}} \times 1000
\]

2.9.7.5 Spontaneous Abortion Rate

\[
\text{Spontaneous Abortion Rate} = \frac{\text{Number of Spontaneous Abortion Occur During the Year}}{\text{Total Number of Conception during the same year}} \times 1000
\]

2.9.7.6 Induced Abortion Rate

\[
\text{Induced Abortion Rate} = \frac{\text{Number of Induced Abortion Occur During the Year}}{\text{Total Number of Conception during the same year}} \times 1000
\]

2.9.8 Selection intensity

For the estimation of selection intensity both Crow’s (1958) and Johnston and Kensinger’s method were used. For this purpose, the reproductive histories of those respondents (females aged 40 years and above) who have completed their reproductive span of life were considered.

Crow’s index of opportunity for selection ($I_1$)

\[
I_1 = I_m + \frac{I_f}{P_s}
\]

Where,
Chapter 2

Materials and Methods

Demographic study with special reference to reproductive and child health among Chiru tribe of Manipur

\[ I_m = \frac{P_d}{P_s} \]

\[ I_f = \frac{V_f}{X^2} \]

\( I_m \) = the index of selection due to mortality

\( P_d \) = the probability of deaths up to pre reproductive age

\( P_s \) = the probability of survival up to reproductive age

\( I_f \) = the index of selection due to fertility

\( V_f \) = the variance due to fertility

\( X \) = is the mean number of live births

Johnston and Kensinger’s index of opportunity for selection (\( I_2 \))

\[ I_2 = I_{me} + \frac{I_{mc}}{P_b} + \frac{I_f}{(P_b P_s)} \]

Where,

\[ I_{me} = \frac{P_{ed}}{P_b} \]

\( P_b = 1 - P_{ed} \)

\[ I_{mc} = \frac{P_d}{P_s} \]

\( P_s = 1 - P_d \)

\[ I_f = \frac{V_f}{X^2} \]

\( I_{me} \) = the index of total selection due to prenatal mortality

\( P_{ed} \) = the probability to die before birth
P₀ = the probability to survive till birth
I_{mc} = the index of total selection due to postnatal mortality
Pₚ = the probability to die before reaching reproductive years
Pₛ = the probability to survive till reproductive age
Iᵱ = the index of selection due to fertility
Vᵱ = the variance due to fertility
X = the mean number of live births

2.10 Measures of Anthropometric nutrition

Body Mass Index for women = Weight (in Kg)/Height (m²)

The International Classification of adult according to BMI.

<table>
<thead>
<tr>
<th>Classification</th>
<th>BMI (kg/m²)</th>
<th>Principal cut-off points</th>
<th>Additional points</th>
<th>Additional cut-off points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt;18.50</td>
<td>&lt;18.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe thinness</td>
<td>&lt;16.00</td>
<td>&lt;16.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate thinness</td>
<td>16.00 - 16.99</td>
<td>16.00 - 16.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild thinness</td>
<td>17.00 - 18.49</td>
<td>17.00 - 18.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal range</td>
<td>18.50 - 22.99</td>
<td>23.00 - 24.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overweight</td>
<td>≥25.00</td>
<td>≥25.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-obese</td>
<td>25.00 - 29.99</td>
<td>25.00 - 27.49</td>
<td></td>
<td>27.50 - 29.99</td>
</tr>
<tr>
<td>Obese</td>
<td>≥30.00</td>
<td>≥30.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obese class I</td>
<td>30.00 - 34.99</td>
<td>30.00 - 32.49</td>
<td></td>
<td>32.50 - 34.99</td>
</tr>
<tr>
<td>Obese class II</td>
<td>35.00 - 39.99</td>
<td>35.00 - 37.49</td>
<td></td>
<td>37.50 - 39.99</td>
</tr>
<tr>
<td>Obese class III</td>
<td>≥40.00</td>
<td>≥40.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For children, classifications of Waterlow’s height for age and weight for height, Gomez’s weight for age were used for children (aged 4 to 12 years) using NCHS reference data. Ht/Age and Wt/Ht were expressed as SD scores (z-scores) using the reference data of the National Centre for Health Statistics (NCHS) (Hamill et al., 1979).

\[ Z \text{ score} = \frac{\text{Measurement of an individual}(X) - \text{Median of a standard community}(M)}{\text{Standard deviation of the measurement in the standard community}(SD)} \]

The cut-off points for mild, moderate and severe malnutrition for the z-scores of these indices are as;

<table>
<thead>
<tr>
<th>Nutritional status</th>
<th>Z-score value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&gt; -1SD</td>
</tr>
<tr>
<td>Mild</td>
<td>-1.1 to -2.0SD</td>
</tr>
<tr>
<td>Moderate</td>
<td>-2.01 to -3.0SD</td>
</tr>
<tr>
<td>Severe under nutrition</td>
<td>&lt; -3.1 SD</td>
</tr>
</tbody>
</table>

Besides above mentioned parameters, the data were analyzed on various bases to achieve the aims of the present study.

What now succeeds in the following chapter is a detailed presentation of the findings on population composition, socio-economic characteristics, fertility levels, fertility preferences, knowledge, attitude and practice of family planning, mortality levels, antenatal and delivery care, breastfeeding practices, immunization and vaccination, knowledge and prevalence of RTIs/STIs, nutritional status, morbidity and their treatment based on data gathered from the research field.