CHAPTER-IV
CHAPTER IV

DISCUSSION

The findings of the present study have been presented elaborately in chapter III. In this chapter an attempt has been made to discuss the present findings in the light of some previous findings of same nature from different parts of the world including India.

Demographic profile

Age-sex structure is one of the most important characteristics of population composition. Almost all population characteristics vary significantly with age. Age statistics form an important component of population analysis, as most of the analysis is based on age-sex structure of the population. The usefulness of age data is more noticeable when it is cross classified by variables like marital status, literacy, educational attainment and economic activity which vary with age in different patterns. Apart from purely demographic concerns, the age-sex structure is required for age specific analysis of data for planning, scientific, technical and commercial purposes (Das, 2011).

According to Sunburg’s classification of population (Dutta, 1972), a population is referred as progressive when the proportions of persons relative to the total population are 40.00%, 50.00% and 10.00% in the age groups 0-14 years, 15-49 years and 50+ years respectively. Following this, both the Bodo and the Rabha populations of Udalguri district are of progressive type.
Sex ratio is defined as the number of females per thousand males. It is an important and useful indicator to assess relative excess of deficit of men or women in a given population at that point of time. Sex differentials can be due to differences in mortality rate, migration, sex ratio at birth and at times the undercounting of women at the time of population enumeration. The sex ratio of populations in villages and towns helps to know the composition of population distribution at lower levels and is also useful in micro level planning (Das, 2011).

The overall sex ratio, i.e., the number of females per 1000 males is higher among the Rabhas (988.86) as compared to Bodos (941) of the present study. According to census India 2011 sex ratio for India, Assam and Udalduri district are recorded as 940, 954 and 966 respectively. Therefore, it can be said that the sex ratio of the Bodos is more or less similar with that of India but lower than Assam and Udalguri district. On the other hand the sex ratio of the Rabhas is higher than India or Assam or Udalguri district.

Among the Bodos 51.44% individuals belong to unmarried category and in the married category the percentage is 46.18%. The percentages of widow and widower are 2.31 and 0.07 respectively. While among the Rabhas 49.86 is the percentage of unmarried person. In the married category the percentage is 47.90%. The percentage of widow and widower are 1.96 and 0.28 respectively. According to 2001 Census of India, the marital status of the scheduled tribes of Assam shows that 57.5 per cent are never married, 39.1 per cent are currently married, 3.3 per cent are widowed, and merely 0.2 per cent are divorced/separated. In the present study it has been found that among the Bodos the percentages of never married and widow are
lower but the percentage of currently married is found to be the higher than the
census of India, 2001. Similar results are found among the Rabhas also.

Literacy rate and level of education are basic indicators of the level of
development achieved by a society. Spread of literacy is generally associated with
important traits of modern civilization such as modernization, urbanization,
industrialization, communication and commerce. Literacy forms an important input in
overall development of individuals enabling them to comprehend their social, political
and cultural environment better and respond to it appropriately. Higher levels of
education and literacy lead to a greater awareness and also contribute in the
improvement of economic and social conditions. It acts as a catalyst for social
upliftment enhancing the returns on investment made in almost every aspect of
development effort, be it population control, health, hygiene, environmental
degradation control, employment of weaker sections of the society (Das, 2011).

The total literacy of the Bodos is 77.88%. Male literacy (83.70%) is higher
than the female literacy (71.89%). Literacy rate of the Rabhas is 68.44% with 76.55 %
for males and 60.39% for females. Literacy rate of the Bodos is higher than Rabhas.
In both the populations, female literacy is found to be lower than that of males. It
may be mentioned here that the literacy rates of the Bodos and the Rabhas are higher
than the literacy rates of the Udalguri district according to census of India, 2011.
(Total literacy rate: 66.60%; Male literacy rate: 73.79%; Female literacy rate:
59.17%).

In demography the dependency ratio has been considered as one of the
important measures of the population. Dependency ratio among the Bodos is 77.01;
while among the Rabhas it is found to be 73.30. The dependency ratios of the Rabhas
and the Bodos of the present study are higher when compared to the dependency ratio of India (Dependency ratio: 53.67).

**Mortality of the children**

Mortality is an important demographic parameter, which determines the growth of a population. The infant and child mortality rates are good indicators of health and well-being of a population. High infant mortality strongly motivates couples to have more children, posing before them a constant fear of possibility of losing infant by death. Besides, high infant mortality shortens the lactation period of the mothers and expose them to the risk of another pregnancy, earlier than expected. As such, high fertility is often associated with high mortality, specially the infant mortality. Chandrasekhar (1972) summarized the evidence and opined that higher the birth rate, the higher is the infant mortality rate.

Among the Bodos the total child mortality (0-14 years) is found to be 4.85%. Infant mortality is the highest and it is 9.89%. In the age group of 1-4 years and 5-14 years categories mortality is found to be 7.94% and 2.24% respectively. Infant mortality of the Bodos is the highest than the mortality in other age groups. Among the Rabhas, the total child mortality (0-14 years) is 6.95%. Like the Bodos, here also mortality of the infants is found to be the highest and it is recorded as 11.76 %. For 1-4 years and 5-14 years categories children the percentages of mortality are 10.71% and 3.99% respectively. In all the three age group category the Rabha shows quite higher mortality as compared to the Bodos. Chi square test shows no significant difference in mortality between the children of the Bodos and the Rabhas in the age group of <1 year, 1-4 years and 5-14 years. According to the NFHS-3 report infant (0-1 year) and child mortality (1-5 years) rates among the tribal populations of India are
62.1 and 35.8 respectively. It can therefore be said that the infant and child mortality rates of the Bodos and the Rabhas are quite higher as compared to the national figure. Mothers early age at marriage and child birth, short birth interval, less education of parents, lack of proper hygiene, poor child health care etc. might be the causes for high infant and child mortality.

**Sex wise mortality**

In most societies where differential treatment has been observed, female children are disadvantaged relative to male children. Discrimination may operate in different areas, including health care, educational opportunities, feeding practices, household chores and distribution of family resource (Arnold, 1991). Discriminatory practices against girls have been widely reported in countries where son preference is strong (Ravindran, 1986).

In both the populations of the present study female child mortality is found to be higher than male child mortality. Among the Bodos, out of total child death 37.93% are males and 62.07% are females; whereas among the Rabhas 47.62% are male children while 52.38% are female children.

Female child mortality is found to be higher in both the groups of the present study. In some earlier studies also infant and child mortality rates for females were found to be higher than the males (Rajaratinam, 1989; Dasgupta, 1990).
Causes of death

A number of studies regarding infant and child morbidity have been conducted in a number of developed countries. These studies have focused on individual causes of morbidity and their remedial measures (Dhanalakshmi, 1993). India is facing with an unparalleled child survival and health challenge. The country contributes 2.1 million of global burdens of 9.7 million under five death annually. One million death occur in the neonatal period alone, mainly by malnutrition, respiratory and diarrhoeal diseases. Malaria and HIV contributes the rest. In February 2000, Govt. of India adopted a national population policy for achieving population stabilization in the country by 2045 (Kumar, 2008).

Among the Bodos of the present study the causes of death of the infants were found to be the low birth weight, followed by pneumonia, diarrhoea, respiratory problem and asphyxia. The major causes of death in the 1-4 years age group category were asthma, followed by diarrhoea, jaundice, fever, pneumonia and unknown. Diarrhoea was the main cause of death among the children of 5-14 years age group category followed by fever, dysentery and accident.

Among the Rabhas the causes of death of the infants were low birth weight followed by asphyxia, pneumonia, diarrhoea and “Letha loga” (evil spirit). The causes of death in the 1-4 years age group category were diarrhoea, followed by “Letha loga” (evil spirit), jaundice, fever, asphyxia and asthma. While fever is the main cause of death among the children of 5-14 years age group category followed by jaundice, diarrhoea, animal bite and dysentery. In the present study, diarrhea is found to be the killer disease among the children. In overall scenario of Assam and India also diarrhea is found to be the killer disease of children (NFHS-3, 2007).
Bio-demographic factors

Mothers age at first child birth and infant and child mortality

The health of an infant is affected by the mother’s age at the time of birth. The very high rate of infant death among the women of below 20 years of age is due to biological immaturity as well as their lack of experience of motherhood. Infant mortality is also high among children born to women aged 35 years or more resulting from biological complications that may occur during their older ages. Usually high parity and repeated births weakened the women and made them anemic. Consequently their babies have lower birth weight and are more likely to succumb to infections and illness. If child bearing is confined to the optimal ages of 20 to 34 years then not only maternal mortality but infant mortality as well can be reduced to the minimum possible levels (Tiwari, 1989).

Among the Bodos and the Rabhas infant and child mortality is found to be the highest among those mothers whose age at first child birth is ≤19 years of age. Chi square test also shows statistical association between child death and mothers age at first child birth in both the population. Among the Bodos the relative risk of child mortality is found to be 1.593 times higher for the mothers of younger age (≤19 years) as compared to those mothers whose age at first child birth is 24 years and above. Similarly, among the Rabhas also the risk is found to be 1.261 times higher for the mothers of younger age (≤19 years) as compared to those mothers whose at first child birth is 24 years and above.
Many studies in India showed extremes of maternal age (< 20 and > 30 years) as risk factors associated with infant mortality (Choudhery and Jayaswal, 1989; Bhandari et. al., 1988 and Roy and Jeyachandran, 1996). The examination of the determinants of infant and child mortality variations in Jordan, Yemen, Egypt and Tunisia using data from WFS Surveys indicated that mortality risk was higher for infants born to very young and very old mothers with short previous birth orders and where previous infants had died (Adlakha, and Suchindra, 1985). Therefore, it can be said that the present findings seem to be same with the findings mentioned above.

**Infant and child mortality by birth interval**

Short birth intervals affect child survival through three mechanisms. First, short birth interval can retard fetal growth resulting in low birth weight and increased death risks due to endogenous causes. Second, they may impair the potential milk production for the child whose birth closes the interval. A third effect result from restriction imposed by too closely spaced births on the distribution of resources including maternal care among children in the household (Palloni and Tienda, 1986).

In the present study Infant and child mortality is found to be the highest for short birth interval period in both the populations. Chi square test shows statistical association between birth interval and child death. Among the Bodos the relative risk of child mortality is found to be 1.738 times higher for preceding birth interval of ≤24 months when it is compared to preceding birth interval of ≥36 months. While among the Rabhas the risk of child mortality is found to be 2.312 times higher for preceding birth interval of ≤24 months when compared with the preceding birth interval of ≥36 months.
The same type of results were recorded in some previous studies also. Chidambaram et al., (1985) found the similar types of results i.e greater risk of child dying among those children whose birth intervals are less than two years. In another study of Population Research Centre, Baroda (1983) found that birth spacing of less than 18 months results in an infant mortality rate greater than 200 per 1000 live births; 36 month intervals reduce infant mortality to 1/3 of this level. Even for higher order births, greater spacing lowers mortality, unless the mother’s advancing age exerts an influence. Children spaced 30 months or more, and born to women ages 20 – 29, have the greatest chances for survival. Patel (2000) found that birth with a short preceding birth interval (≤18 months) faced more than twice the risk of neonatal deaths than that of births with longer duration (>18 months).

**Infant and child mortality by birth order**

Birth order is an important fertility indicator which has a considerable influence on infant mortality. It is well known that several studies on infant mortality conducted in different parts of the world show a “U” or a shallow “u” or a reverse “J” shaped curve in its relationship with the birth order (Wyon and Gordon, 1962; Orman and Standley, 1976; Shah and Abbey, 1971; New Combe, 1965; Palloni,1981; Mahadevan, 1986; Stockell and Chowdhury, 1976).

It is observed that infant and child mortality are gradually increasing with increasing numbers of birth order in both The Bodos and the Rabhas. Chi square test shows significant statistical association between child death and birth order in both the populations.
Among the Bodos the risk of child mortality is found to be 3.449 times higher for birth order 2-3 and 26.040 times higher for birth order 4+ as compared with single birth order.

While among the Rabhas the risk is found to be 2.792 times higher for birth order 2-3 and 12.623 times higher for the birth order 4+ as compared with single birth.

It may be mentioned here that Rutstein, (1984) and Islam et al.,(2013) in their studies also recorded higher child mortality when the mothers have more conceptions. Higher birth orders are likely to be born to older mothers and these children may face competition for resources such as food and medical care.

**Socio-economic factors**

**Infant and child mortality by type of family**

In Indian society mainly three types of families are found. They are: (1) Nuclear families (2) Joint families and (3) Extended families. In Nuclear families, decisions are taken by the couples, whereas in joint or extended families, decisions are taken by the elder members or heads of the households. Sometimes decision making in joint/extended families is delayed to get approval from the head of the household. Because of these reasons, chances of incidence of mortality and morbidity of under five years children is less in nuclear families than in joint or extended families (Dhanalakshmi, 1993)

A mixed type of results is found in the present studies. Among the Bodos infant and child mortality rate is found to be the highest in joint families as compared to nuclear families. But among the Rabhas infant and child mortality rate is found to
be the highest in nuclear families as compared to joint families. However, chi square test shows no statistical association between child death and types of family in the both the study groups.

**Infant and child mortality by type of house**

Poor housing conditions have long been associated with infant and child mortality. It is difficult to state in absolute quantitative terms how much and what kinds of illness are caused by poor housing. However, it may be argued that houses built with better quality of materials are expected to contain better quality and quantity of water, toilet facilities, ventilation, low room density and modern goods like refrigerator, radio, T.V., etc. These factors of housing play an important role in influencing infant mortality and child survival prospects either through disease transmission or infant and child health attributes. Better housing conditions are negatively associated with infant mortality (Bajkhaif and Mahadevan, 1993).

Among the Rabhas both infant and child mortality are found to be highest in families living in kutcha houses but among the Bodos infant mortality is highest in families living in kutcha houses while child mortality is highest in families living in semi-pucca houses.

No statistical association is found between child death and types of house among the Bodos while a statistical association is found among the Rabhas.

The risk of child mortality among the Rabhas is found 1.146 times higher in semi-pucca houses and 3.510 times higher in kutcha houses when compared with pucca houses. Sandhya, (1991) also found the similar kind of result in a study in Andhra Pradesh.
Infant and child mortality by education level of mother

One of the important social factors that has been observed to be consistent in explaining the child mortality differential is the mother's educational level. The higher the level of mother's educational attainment, the lower is the risk of dying for her children (Rahman et al., 1993). Bhende and Kanitkar in 1989 said that there is an inverse relation between education and mortality. Educational attainment of parents especially that of mothers have a significant relationship with the levels of infant mortality. Similarly, Khan et al., in 1986 said that education of mother has strong bearing on infant mortality.

Like the previous studies in the present study also maternal education is playing a very important role in regulating infant and child mortality of the Bodos and the Rabhas. Infant and child mortality are found to be inversely related to mothers education in the both study groups. Among the Bodos the risk of child mortality is found to be 14.591 and 5.253 times times higher for illiterate and primary educated mothers respectively when it is compared with secondary level and above educated mothers.

While among the Rabhas the risk of child mortality is found to be 3.940 and 7.135 times times higher for illiterate mothers and mothers having primary level of education as compared with secondary level and above educated mothers. Following are some of the previous studies showing the same results as that of present study.

Many research studies also indicated a strong inverse relationship between mothers education and child mortality (Behm and Hugo, 1979; J.C., 1979; Caldwell and McDonald, 1981; and Kathryn and Amin, 1992 ). In developing countries like India, mothers education has been considered to have a strong effect on the mortality
of young children (Das and Dey 2003; Khasakhala 2003; Pandey et al., 1998; Rama Rao et al., 1997)

**Infant and child mortality by education level of father**

The importance of parental education in reducing mortality within the first two years of life has been documented in a study of 10 WFS countries including Jamaica, Bangladesh and Peru. In most countries father’s education has a bearing on early childhood mortality, quite distinct from the effects of occupation and education of mothers’ but overall its effect appear to be have been limited compared to the education of mother’s. There are also findings that the impact of parental education would be greater than that of income factors and access to health facilities combined (Caldwell and Donald, 1981).

Among the Bodos both infant and child mortality are found to be inversely related with father education. On the other hand among the Rabhas only infant mortality is found to be inversely related with fathers education but child mortality is not inversely related. However, no statistical association is found between child mortality and fathers education in both the groups.

Similar type of results were found by Islam and Islam in 2013 in a study in Bangladesh.

**Infant and child mortality by occupation of mother**

Mothers’ occupation is an important factor which effect infant and child mortality. Generally, in poor families women work for daily wages to supplement their husbands’ earnings. Since these women are compelled to work outside home, they find it difficult to take care of their children at home. This fact may act as an
indirect factor influencing high infant and child mortality in these families (Bajkhaif and Mahadevan, 1993).

Among the Bodos and the Rabhas infant mortality is found to be the highest when mothers’ occupation is unskilled labour. Chi square test shows statistical association between child mortality and occupation of mothers among the Rabhas only.

It may be mentioned here that Ladusingh and Singh (2006) examined the relevance of socio-cultural and environmental factors in explaining child mortality in Northeast India and provided evidence that women engaged in agriculture based work contributes to higher risk of child mortality.

**Infant and child mortality by occupation of father**

The occupation of the parents affects the health of the children because good food, proper nutrition and better medical facilities are related to better income. Therefore it can be said that the occupation or income of the parents are indirectly related to infant and child mortality.

Among the Bodos infant and child mortality are found to be the highest when father’s occupation is unskilled labour. On the other hand among the Rabhas in infant mortality is found to be the highest when father’s occupation is business. On the otherhand child mortality is found to be the highest among the fathers of unskilled labour categories. A statistical association have been found between child mortality and fathers occupation among the Bodos but among the Rabhas no such association has been observed.
The present finding is in conformity with the study of Alam, 2011 who found child mortality to be the highest among the labour categories. Bajkhaif and Mahadevan (1993) also found high infant mortality among those of lower categories of occupation and it is very low among those of higher occupation.

**Infant and child mortality by sanitary facility**

Housing condition is a broad term that refers to the quality of a dwelling unit and the availability within that unit of goods and services that are pertinent to the spread of disease agent or probability of accident occurrence. Many diseases are likely to be transmitted when hygienic toilet is not available. The assumption is that households which have water-closet are likely to check the transmission of certain communicable diseases that persist in cases where households use fields for defecation. These aspects are very important to maintain the health of infant and children (Bajkhaif and Mahadevan, 1993).

In both the populations of the present study infant and child mortality are found to be the highest in families where there is no sanitary facilities and usually go to open for defecation and it is found to be the lowest in families where flush toilet facilities are there. Chi square test also shows statistical association between child death and toilet facility in the both study groups. Among the Bodos the risk of child mortality is 11.296 higher in families having no toilet facilities and 2.917 times higher in Kutcha latrine users as compared to those having sanitary toilet facilities.

On the other hand among the Rabhas child mortality is found to be 7.959 times and 2.551 times higher among the households having no toilet facilities and kutcha toilet and respectively as compared to those households having sanitary toilet facilities.
An assessment of the level of child mortality in Goa state, India based on the National Family Health survey, (1992-93), also revealed that mortality was three times higher among the children from households without toilets as compared to children with toilets.

**Infant and child mortality by monthly household income**

Among the Bodos the infant mortality is found to be the highest among the middle income group (MIG) whereas among the Rabhas it is the highest lower income group. On the other hand child mortality is higher in low income group in both the populations. Only the Bodos show statistical association between child death and monthly household income.

The relative risk of child mortality among the Bodos is found to be 3.878 times and 5.928 times higher in households with middle income group (MIG) and lower income group (LIG) respectively as compared to the households of high income group (HIG).

A similar result was also found by R.M Patel in 2000 while analyzing the NFHS (1992-93) data of Gujrat. He found that children born to medium and high income families faced 47.61 percent less risk of infant death as compared to low income group families.

**Infant and child mortality by availability of drainage facility**

In the both of study groups infant and child mortality are found to be higher in families having no drainage facilities as compared to the families having proper drainage facilities for the disposal of waste water. Chi square test also shows statistical association between child death and drainage facility in both the study groups.
The risk of child mortality among the Bodos is found to be 8.651 times higher in families having no drainage facilities as compared to the families having proper drainage facilities. However, among the Rabhas it is 3.013 times higher in families having no drainage facilities.

Gharami and Sharma (2007) who studied the household environment influence on infant and child mortality with special reference to Kol tribe of Madhya Pradesh reported that infant and child mortality is recorded to be the lowest among the families having proper drainage facilities. Thus it can be said that the present study once again proves the relation between cleanliness and child mortality.

Health care factors

Infant and child mortality by place of delivery

Due to good health hygiene and care at the time of birth, children born in institutions are generally expected to have low risk of death as compared to children born at home.

Among the Bodos and the Rabhas of the present study infant and child mortality are found to be higher in home delivery cases as compared to hospital deliveries. Chi square test also shows statistical association between child death and place of delivery in both the study groups. Among the Bodos the risk of child mortality is 2.828 times higher for children born at home as compared to children born at hospital. Among the Rabhas the risk is found to be 3.730 times higher.

The present findings show conformity with the study of Chowdhury (2013) who examined the determinants of under-five mortality in Bangladesh. He found that the risk of child mortality is higher in home deliveries as compared to hospital
deliveries. Many others studies (Rajaratinam, 1989, Rajaram, 1990, Pandey, et al., 1998) also support the present findings.

**Infant and child mortality by attendant at the time of delivery**

It is generally expected that the chance of survival of a child is higher when the birth is attended by a trained health personnel. Roy and Jeyachandran, (1996) found that the survival chances of births which were delivered with the assistance of untrained dhai were significantly less in those which were delivered with the assistance of health professional such as doctors. Khongsai, (2012) found higher infant and child mortality among the Khongsai Kukis of Imphal town and Saikul sub division when deliveries were assisted by elderly person than the trained health personnel.

Among the Bodos and the Rabhas infant mortality is found to be the lowest when deliveries were attended by doctors. Chi square test shows statistical association between child death and attendant at the time of delivery in both the study groups. Among the Bodos the logistic regression shows the risk of child mortality is found 23.556 times higher in deliveries attended by untrained dhai respectively as compared to the deliveries attended by doctors. While among the Rabhas the risk is found 6.368 times higher.

**Infant and child mortality by instruments used for cutting umbilical cord**

Traditional birth attendants while conducting delivery adopt several unhygienic and unscientific ways which are very harmful to both mothers and newborn babies. One such unhygienic method is the instrument used to cut the
umbilical cord. The use of unhygienic instruments like unsterilized blade and scissors which are used for domestic purposes, cause infection, tetanus etc., to both mothers and children.

Infant and child mortality are found to be the highest when unsterilized equipments were used for cutting umbilical cord of the infant in both the study groups. Chi square test also shows strong statistical association between child death and instruments used for cutting umbilical cord. Among the Bodos when child mortality is compared with the instruments used for cutting umbilical cord the risk is found to be 1.812 times higher when unsterilized blades used and 6.135 times higher unsterilized scissor is used as compared to sterilized equipments. While among the Rabhas risk is found to be 2.002 times higher when unsterilized blade is used and 6.135 times higher when unsterilized scissor is used for cutting umbilical cord as compared to sterilized equipments.

Mahadevan et al., (1985) found the similar results when they studied infant and childhood mortality among the three cultural groups viz. the Muslim, the Harijans and the Caste Hindus belonging to the Rayalaseema region of Andhra Pradesh. Smucker et al., (1980) found that the risk of infant death is higher in unscientific birth practices like cutting umbilical cord using non-sterilized material by the indigenous dhais.

**Infant and child mortality by UC care**

Medical attention at the time of delivery and umbilical cord care are significant factors in the survival chance of a new born. Use of medicated powder in umbilical cord prevents from many kinds of infection and also reduced mortality at the early stages of life (Zacharia et al., 1994).
In both study groups infant and child mortality are the highest when some traditional methods are used for UC care. Chi square test shows a statistical association between child death and UC care among the Bodos but does not show such association among the Rabhas. Among the Bodos the risk of child mortality is 1.812 times higher when talcum powder is used and 4.388 times higher when vermillion mixed with mustard oil is used for umbilical cord care as compared to medicated powder.

**Infant and child mortality by status of immunization**

Immunization of children against six vaccine preventable diseases (tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis, and measles) is observed to have significant effect in reducing infant mortality. In the both the study groups infant and child mortality are found to be the highest in those who are not at all immunized. Chi square test shows statistical association between child death and status of immunization in the both study groups. Among the Bodos the risk of child mortality is 12.059 times and 3.742 times and 183356397099.978 times higher in still continuing, half immunized and not immunized categories respectively as compared to those children who have completed their immunization. While among the Rabhas the risk is 11.190 times, 2.914 times and 29.500 times higher in still continuing, half immunized and not immunized categories respectively as compared to those children who have completed their immunization.

The findings of NFHS-1, NFHS-2 and NFHS-3 also reveal the similar results i.e the risk of child mortality is found to be the highest among those children who are not at all immunized. The studies of Zubair *et al.*, (2003), Kabir and Long (2002), and Agarwal *et al.*, (1995) also support the present findings.
Infant and child mortality rates by birth weight

It is generally believed that low birth weight (<2500 grams) babies are having more chances of dying at the early stages of their life than the babies born with normal weight (2500 grams and above). NFHS-3 estimated that, in India one third of all neonatal death are due to low birth weight and this rate is the highest in the world. A multicentric study done by Indian Council of Medical Research (ICMR) in three urban slums of Delhi, Calcutta and Madras and in same number of rural areas, revealed that 41.4% live births were LBW as compared to 38.1% rural children (Bhargava, Singh and Saxena, 1991). Gopalan in 1995 showed that the risk of perinatal and infant mortality rates are greater among the low birth weight infants with higher morbidity and long term developmental problems among those babies who survived.

In both the study groups low birth weight babies show the higher risk of mortality during infancy and childhood period as compared to the normal birth weight babies. Statistical association is also found between child death and birth weight. Among the Bodos the risk of child mortality is 8.651 times higher in those children whose birth weight are below normal (<2.5 kg) as compared to normal weight (2.5 kg or above). While among the Rabhas the risk is 3.013 times higher in children whose birth weight are below normal (<2.5 kg) as compared to normal weight (2.5 kg or above).

Patterns of morbidity
In the present study, it has been observed that both the populations have very poor knowledge regarding good health. Considering the morbidity pattern, worm infestation is found to be the highest in the age group of <1 year and 1-4 years of children in both the study groups. In the age group of children of 5-14 years fever is found to be the highest among the Bodos while among the Rabhas diarrhea and dysentery is to be the highest.

**Type of treatment**

As compared to the Bodo children less number of Rabha children got benefits of allopathic treatment. The main reasons for not availing the medical treatment were reported as poor economic condition, lack of communication and lack of proper knowledge. Like many other indigenous communities of the world the present study groups are also not very much conscious about the diseases. In some cases they wait for some days for natural recovery, if the conditions do not improve they take home remedies or help of traditional medicine man or ‘Ojha’. Finally when they do not get any positive result then only they prefer allopathic treatment.

**Type of house and child morbidity**

Type of house is negatively associated with the incidence of child morbidity. The occurrence of diseases among the children decreases with the improvement of house type (Kalpan and Taylor, 1985 and Dhanalaksmi, 1993).

In both of the study groups child morbidity is found to be the highest in kutcha houses followed by semi-kutcha and pucca houses. A significant statistical association is found between type of house and child morbidity in both the study groups. Thus the present study is inconformity with the study of Kalpan & Taylor and Dhanalaksmi.

**Sanitary facility and child morbidity**
In both of the study groups the incidence of child morbidity is found to be the highest in families using open air for defecation followed by the families having kutcha and pucca toilet facilities. Chi square test shows significant association between sanitary facility and child morbidity in both the study groups.

Thus it can be said unhygienic sanitary conditions among the Bodos and the Rabhas may cause diseases like worm infestation, diarrhea and dysentery.

Jain and Vasaria in 1988 stated that sanitary facility has a direct inverse relationship with child morbidity. Morbidity of the children found higher in those families having no proper sanitary facilities.

**Nature of use of drinking water and child morbidity**

It is generally believed that families who use drinking water after boiling or filter have experienced the lower risk of child morbidity. In both the study groups child morbidity is found lower in the families using drinking water after boil or filtered as compared to families using drinking water without boiling or filtering. A significant statistical association is found between the nature of drinking water and child morbidity in both the study groups.