In this chapter, an attempt has been made to discuss the results of the analysis made in the preceding chapters in order to examine the probable causes of these results. The present findings have also been tried to be discussed against the findings on other populations of North-East India.

DEMOGRAPHIC COMPOSITION

The total populations of the Minyongs and the Misings covered in the present study are 2194 and 2469 respectively. In both the populations, the total percentage of females is slightly higher than that of the males. This is because the females are seen to outnumber the males beyond 60 years of age. The population distributions by age and sex (3.1 A, B, C & D) of the Minyongs and the Misings show that the numbers of males and females decrease with the increase in age with minor fluctuations in-between.
However, the Misings show slightly higher percentages of children in the age-cohort of 0-4 years (12.11%) than that of the Minyongs (8.75%). The highest concentrations of Minyong males and females are observed in the age-cohort of 15-19 years against 0-4 years among the Misings. The population pyramid of the Misings show a childhood bulge at the age cohort of 0-4 years, whereas, the Minyongs show an adolescent bulge at the age cohort of 15-19 years. This indicates that the Minyong couples are trying to limit their fertility by adopting various family planning devices since last 15-19 years (Table 4.27). This signifies that in the last 15 years, the birth rate has slowed down among the Minyongs. But the highly triangular shape of the pyramid with concave and tapering sides before 15 years from now clearly indicate that the Minyong population was at the initial stage of the demographic transition. However, in the last 15 years, the population shows a gradual transition from stage I to stage II. As per Sundbarg's age-sex classification (Datta 1972), the population is of progressive type. The population pyramid of the Misings (Fig 3.1 B) show that though in the last 20 years the growth rate has slowed down but again in the last 5 years show a sudden bump in the age cohort of 0-4 years. The result is a characteristic ace-of-spades form of population pyramid. When the population pyramids of the two Mising populations (Fig 3.1 C & D) are analyzed separately, same trend is noticed. Like the Minyongs, the Mising population is found to be of progressive type. It is interesting that in the last 5 years, the birth rate of the Misings has suddenly increased slightly than last 15 years and the reason for such a change can not be explained at present. However, if the recent fertility rate is continued unchanged then the Mising populations would experience a population expansion. One of the reasons for this may be the Misings show an age-sex structure favourable to the women of childbearing ages from 20-24 years to 35-39 years than that of the Minyongs.
To have an overall picture of the age distribution, it is conventional to use the median as the average of age distribution (Yaukey 1985). The median age of the total Minyong population is found to be 22.74 years, whereas, that of the Mising population is found to be 25.75 years. Thus, the Minyong population is quite younger than that of the Mising population. This is because; the proportions of children as well as youths are comparatively higher among the Minyongs (70.83%) than that of the Misings (65.25%). In both the populations, the higher male median age compared to the female is indicative of the fact that there are more males in the higher age groups particularly from 40-59 years than that of the females, though the number of females above 65 years of age is found to be slightly higher than the males. As a whole, the median ages in the present populations indicate higher proportions of young individuals and the major outcome of the younger population structure is high fertility (Yaukey 1985).

The overall sex-ratio of the Minyong population is found to be 1029.60 (females per 1000 males), which is much lower than the overall sex-ratio of the Mising population (1057.50). Thus, in both the populations, the number of females is higher than the number of males, however, Misings show a higher female to male ratio than the Minyongs. A similar trend is noticed when the sex ratios of the two Mising populations are analyzed separately with that of the Minyongs. The overall sex-ratio of the Misings of Majuli (1076.66) is quite higher than that of the Misings of Dhemaji (1039.15). This picture is just the opposite of the overall sex ratio of India (Census 2011) which depicts lower sex ratio and thus, females are at a disadvantageous position in India (940 per 1000 males). This is because the Misings of Majuli show higher sex-ratios particularly in the childbearing age cohorts of 20-24 years to 35-39 years but in case of the Misings of Dhemaji, the sex ratio suddenly decrease at 30-34 years to 35-39 years. Both the
populations of the Misings show lower sex ratios from the climacteric period (40-44 years) to the post-menopausal age cohorts of 45-49 years may be due to higher female mortality because of health complications. According to Schmitt et al. (2008), the risk of cardiovascular diseases and neoplasm increase in the climacteric period. Mace et al. (2003) found that the global variation in sex ratio at birth has evolved as a response to the high physiological costs of producing boys in high fertility populations.

Dependency ratio is said to be a measure of impact of age composition on economy (Jones 1974). It is calculated on the basis of three broad age groups, that is below 15 years or young dependents, between 15 and 64 years or working population and 65 years and above or old dependents. It is based on the fact that individuals below 15 years and those above 64 years are not producers but all these individuals are consumers depending over the working population. In the present study, the total dependency ratio of the Minyong population is found to be 55.05 and that of the Mising population is found to be 58.57. Thus, the total dependency ratios of these two populations are slightly higher than that of the total dependency ratio of India (54.34; Census 2011). The child dependency ratio of India is quite low (30.21, Census 2011) than that of the Minyongs and the Misings; and it is found to be little higher among the Minyongs (47.77) than among the Misings (46.31). The old dependency ratio is, however, much higher among the Misings (12.26) and the Minyongs (7.28) than that of India (4.99; Census 2011). Thus, the Mising population is slightly older than that of the Minyong population with higher percentage of aged and slightly lower percentages of working individuals and children than that of the Minyongs. However, this suggests that the average longevity of Misings is comparatively higher than that of the Minyongs. Due to quite higher old dependency ratio, the Misings (58.57) show a higher total
dependency ratio than the Minyongs (55.05). Sometimes it is also considered that dependency ratio is a measure of social development and of economic burden as well. The less developed countries have higher child dependency ratio and more developed countries have higher old dependency ratio. But there are contradictions towards this view because in most agricultural communities, children are engaged in economic activities. The same is evident in the present study. It is observed that the Minyong and the Mising children of 10 years and above are engaged in cultivation as well as different kinds of skilled works. Therefore, dependency ratio is not a completely accurate measure for assessing the dependency burden of a community as not all the individuals belong to the working age groups are engaged in economic activities and not those in the dependent ages are actually dependent (Bhende and Kanitkar 2004).

As already mentioned the Minyongs as well as the Misings are patrilineal societies and the paternal property is inherited only by his sons equally not his daughters. However, the maternal movable assets like ornaments, utensils and the loom are inherited by the daughters at the time of marriage in both the communities. The Misings have patrilocal residence; joint families are the dominant family type (59.65%). Contrary to that nuclear families are mostly prevalent family type among the Minyongs (79.69%) and they prefer neolocal residence after marriage. Among the Misings, the joint families are rapidly disintegrating into nuclear families. This is mainly because of changing occupational pursuits from agriculture to various other occupations due to destruction of crops by perennial floods. The total Mising and the Minyong households covered in the present study are 394 and 330 respectively. It is apparent from the study that the highest percentage of Minyong households are the big-sized consisting of 7-9
members, followed by medium-sized households; whereas, in case of the Mising, more than half of the households are of big-sized, followed by very big-sized households consisting of 10 or more members. The small-sized households (1-3 members) are least found in both the populations.

It is evident from the present study that the percentage of currently married individuals is quite higher among the Minyongs (51.09%) as compared to the Mising (43.72%). Moreover, the percentage of married Minyong females is far higher (53.46%) than the percentage of married Mising females (42.72%). The mean age at marriage of the Minyong girls is quite early (16.49±0.11 years) than that of the Mising (22.77±0.12 years). This is because the Minyongs consider the females who have attained menarche as of marriageable age and it is observed that the median age at marriage of the Minyong females in the studied village is 16.11±0.13 years whereas it is 22.20±0.11 years among the Mising. Among the Minyongs, the number of married males and females are higher than the unmarried males and females, whereas, in case of Mising, an opposite picture is noticed. One of the reasons for such an opposite picture is that higher percentages of Mising males as well as females pursue education up to secondary standard (Class VIII-X) and beyond and so naturally the age at marriage at marriage increases than that of the Minyongs. According to DLHS-3 (2007-2008), the age at consummation of marriage of Arunachal women before the legal age at marriage of 18 years is found to be 25.5 per cent and about one-fifths of women experience post delivery complications. Premature pregnancy and motherhood are an inevitable consequence of child marriage. Girls under 15 are five times more likely to die during pregnancy and childbirth than women in their twenties (SOWC 2007). According to Gangadharan and Maitra (2000), education is the prime catalyst of demographic
transition in any country because increase in educational attainment significantly affect both age at marriage and timing of first conception—particularly increasing both age at marriage and the time to first birth.

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 contributes in improvement of economic and social conditions (Census 2011). Among the Minyongs (44.26%) as well as among the Misings (58.37%), the percentages of literates are quite lower than that of India (74.04 %). Moreover, the total literacy rate of the Minyongs is quite lower than the total literacy rate of Arunachal Pradesh (65.38%) and the total literacy rate of the Misings is quite lower than the total literacy rate of Assam (73.18%). Like the national and the state scenario, the percentage of female literates is quite lower than that of the male literates among the Minyongs and the Misings. However, the Minyong women show the lowest percentage of literates (40.67%) which is much lower than that of the Misings of Assam (56.05%) as well as the total female literates of Arunachal Pradesh (53.52%; Census 2011). The presence of a girls’ High school in addition to a number of schools and colleges for co-education in the Jengraimukh area of Majuli indicate the interest of girls as well as boys for education in the area. All these educational institutions are easily accessible to the present study village Kumarbari of Majuli. However, the distance of Batuwa village of Dhemaji to the schools and colleges is much higher since the village is situated much interior. The concentration of males and females tend to decrease as the educational levels increase both among the Misings as well as the Minyongs. Among the Minyongs, the highest percentage of male literates is found in the primary standard
(Class I-IV) of educational level whereas the highest percentage of female literates is found in the Secondary standard (Class VIII-X), however, in case of the Misings, the highest concentration of male and female literates are observed in the Middle standard. It is interesting that in both the populations, male literates outnumber female literates in higher educational levels, particularly beyond middle standard (Class V-VII). The females are rarely motivated to attend schools and colleges and to pursue education to the higher levels of education, particularly beyond matriculation.

It has been noted from the present study that the percentage of total working population is 54.53 per cent among the Minyongs and it is 51.84 per cent among the Misings, thus, these figures are quite lower than that of the working population percentage of India (63.9). The instances of working males and females are noticed from the age group of 10-14 years in both the populations, but up to 15-19 years, the percentages of Mising working population is found to be very less than the Minyong working population of the same age-groups. The percentage of non-workers is higher in case of Misings than that of the Minyongs because higher numbers of Mising children and youth are engaged in education, in all educational levels than among the Minyongs. Like the Misings, the highest percentages of Minyong males (46.81%) as well as females (42.14%) are engaged in cultivation. Moreover, it is observed that the higher number of Mising males and females are engaged in petty business, skilled work as well as in other professional jobs in compared to the Minyongs. This is because the Mising areas in Assam are perennially affected by floods which tend to damage the crops and the cultivators are in great loss every time. So, it is noted that many cultivators have lost their hope for a fruitful harvest and have changed their occupational pursuits to these categories of jobs. Very few Minyongs are engaged in skilled work (2.27%), Lower
Professional (2.09%) and Middle Professional jobs (0.82%) in compared to cultivation. However, higher numbers of females are engaged in petty business and skilled work than the males in both the populations, particularly in selling traditional woven dress materials and fruits and vegetables than the male counterparts.

FERTILITY

Though fecundity is a biological phenomenon, fertility of women in any society is affected by various biological and socio-cultural factors. Of the various factors, menarche is a biological event expressed in a woman at a particular stage of her physical development since woman become fecund with the onset of menstruation. The child bearing capacity comes to an end with the onset of menopause, that is, when menstruation ceases permanently.

The age at menarche is an indicator of development of reproductive capacity. According to Tanner (1978), 95 per cent of the girls attain menarche between 11 and 15 years of age. The average age at menarche is widely used as an indicator of population fecundity (Udry and Cliquet 1982). Early menarche poses a public health concern as it may result in earlier onset of sexual activity (Wyatt et al. 1999). It is also used as a measure of miscarriage and unsuccessful pregnancy outcomes (Wyshark 1983; Sandler et al. 1984). In the present study, the overall mean age at menarche of the Minyong women is found to be 15.88±0.03 years, which is slightly higher than that of the Mising of Assam (14.78±0.12 years) and the difference is found to be statistically significant. The menarcheal age of these two tribes are higher than that of the Brahmins (12.50±0.11 years), Kayastha (12.00 years) and Ahoms (11.65 years) of Assam studies by Das and Das (1967) and that of the Brahmin (12.33±0.08 years), Kalita (12.51±0.07
years) and Ahom (12.83±0.12 years) of Assam studied by Das (1987). It is also higher than that of the Sinphos of Arunachal Pradesh (12.59±0.15 years) as studied by Kar and Mahanta (1975) as well as Mikirs (12.75 years) and Kacharis (12.77 years) of Assam as studied by Gogoi (1972). Tangkhul Naga (13.93 years) as studied by Chakravarty (1986); Tarao Naga (13.46 years) of Manipur as studied by Singh (1988) and Zemi Naga (14.13 years) of Nagaland as studied by Bhowmick (1971) also show comparatively lower mean menarcheal age than that of the Minyongs and the Misings of the present study. It is difficult to explain at the moment the causes of such variations of the age at menarche because it is influenced by various factors like heredity, environment and nutrition (Tanner 1966). It is interesting that in the present study, the age specific mean age at menarche of the Mising as well as that of the Minyong women show a gradual trend of decrease from the higher to the lower age groups of women (fig. 4.1A). In both the populations, the highest mean age at menarche is observed in the highermost age group, i.e. among the women of 65 years and above, whereas, the lowest age specific mean age at menarche is observed in the lowermost age category of women, i.e. 15-19 years in case of the Minyongs (14.0±0.02 years) and 20-24 years in case of the Misings (13.67±0.04 years). The age specific mean age at menarche of the two populations (Fig. 4.1A) is almost similar among the women of aged 50 years and above but suddenly the values of the age specific mean age at menarche dipped among the Mising women of aged below 50 years. Various scholars attribute this declining trend to the improvement in the nutritional and general health conditions of women (Bagga and Kulkarni 2000; Okasha et al. 2001). The same declining trend of the age specific mean age at menarche from the higher to the lower age categories is observed among the Mising women of two ecological settings. The age specific mean age at
menarche is (Fig. 4.1B) declined more sharply among the Mising women of Majuli than among the Mising women of Dhemaji. Such a downward secular trend from the higher to the lower age groups has been reported by many workers (Michelson 1944; Tanner 1962; Sarkar and Roy Choudhury 1968; Ghosh and Kumar 1973; Wyshak 1982; Bagga and Kulkarni 2000; Prentice et al. 2010; Cho et al. 2010) and also noticeable in the present study when the Minyong and the Mising women are categorized into three broad age categories, each incorporating 20 years of class interval. The menarcheal age in the mid 19th century ranged from 16-17 years of age (Ong et al. 2006) and recently based on studies from 67 countries published between the 1960s and the 1990 s, the mean age at menarche was reported to be 13.53±0.98 years (Thomas et al. 2001). This trend signifies a decline rate of 3 to 4 months per decade (Ong et al. 2006). Although it has been suggested that the downward trend has slowed in some European countries (Ong et al. 2006), it is still ongoing in the United States and Asia (Adair et al. 2001). The median age at menarche of the Minyong women (15.51±0.01 years) is quite higher than that of the Mising women of Assam (14.37±0.13 years).

Fertility depends on three elements- fecundity, age at marriage and successful birth outcome. Thus, the age at entry into couple formation or age at marriage of the women is a significant factor to determine the actual reproductive span of a woman. This is, on the other hand, depends on the age at attaining menarche in certain cultural groups (Ogata 1979; Bhende and Kanitkar 2004). The overall mean age at marriage of the Minyong women is found to be 16.49±0.11 years which is quite lower than that of the Mising women (22.77±0.12 years) and the difference between these two mean values are found to be statistically significant, whereas, the minimal difference between the mean values of the two Mising populations is found to be statistically insignificant.
However, average age at marriage in India is found to be quite higher (24.1 years) than these populations of the present study. It is interesting that the higher age categories of women show lower age at marriage than the lower age categories of women. This trend is observed both among the Minyong as well as Mising women. The Government of India had fixed the minimum legal age of marriage for the girls at 18 years, but in the present study, the total percentage of Minyong women entering into marriage below this legal age is 88.25 per cent, which is quite higher than the percentage of Mising women entering into marriage below this age (3.00%) as well as that of India (3.7) and Assam (5.1). When the two Mising populations are analyzed separately, it is observed that the women entering into marriage below 18 years is extremely minimal in both the populations but this percentage is slightly higher among the Mising women of Majuli (3.50%) than the Mising women of Dhemaji (2.50%) and thus almost similar to the national scenario. Various research have proved that the girls under 18 years of age are five times more likely to die during pregnancy and childbirth than the women in their twenties (SOWC 2007). The legal minimum age at marriage reflects a concern for physiological maturity to bear as well as to rear children along with the capacity to engage in sexual activity. The range of age at marriage of the Minyongs is found to be quite lower (14-18 years) than that of the Misings (16-28 years). It is pertinent to note here that though early marriage is encouraged in the Minyong society, no instance of marriage is found before the onset of menarche. However, the median age at marriage of the Minyongs is found to be 16.11±0.13 years, which implies that among the Minyong women, age at menarche is an important determinant of age at marriage (Table 4.1 and 4.3). On the other hand, among the Misings, the age at entry into marriage is quite late than the age at menarche. One of the definite reasons for slightly
late entry into marriage by the Mising women is the pursuance of education which indirectly rises the age of marriage. Krisnan (1976) observed that there is a positive impact of education on the age at marriage. When age at marriage is classified based on broad range age groups (table 4.5), it is observed that the mean age at marriage of the Mising as well as Minyong women is the highest among the women belonging to the age group of 15-34 years followed by the women belonging to the age group of 35-54 years. The lowest mean age at marriage is observed among the women of above 55 years of age. Thus, an increasing trend in age at marriage is noticed from the higher to the lower age categories of women in all the populations of the present study. An important factor resulting in this increase is the education of girls. This has resulted into another immediate consequence: the females who are educated upto graduate and above prefer to have a husband of the same educational status and as a result wait for the desired groom who may not be from the same village. This is particularly noticeable among the Mising women of both the villages. The following case studies will throw light on these causes.

Case 1

Name- Smti. Lata Doley, Age-38 years, Village- Kumarbari, Majuli Smti. Lata Doley, who is 38 years old, got married at the age of 32 years with Mr. Lalit Doley, who is a primary school teacher and a Graduate. She is also a Graduate and works as an office assistant in the Jengraimukh College. Her younger sister (30 years) is also unmarried and they are continuing their education in the Jengraimukh College. She said that she remained unmarried upto 32 years as she could not find a suitable groom. She wanted
her groom to be as educated as her and should have a government job and a well defined social status.

Case 2

Name- Smti. Jamini Pegu, Age-35 years, Village-Kumarbari, Majuli Smti. Jamini Pegu, who is 35 years old, got married at the age of 31 years. She is a matriculate and engaged in petty-business of local handloom production. She wanted her groom to be of appropriate educational and social status. She did not want to get married with an individual engaged in cultivation. Currently, she is married with Mr. Tapen Pegu who has a shop of Mising traditional dress materials in Kamalabari Tiniali and both work together in this business.

The mean age at first delivery of the Minyong and the Mising women are found to be $18.71±0.21$ years and $23.98±0.12$ years respectively and the difference is found to be statistically significant. The mean age at first delivery of the Minyongs is quite lower than that of the Mising of the present study. This age is also lower than the Santals $(22.04±0.32$ years), Bhuiyan $(22.61±0.19$ years), Koya $(21.31±0.51$ years) and Gond $(22.21±0.31$ years) of Orissa (Deka 1991) and the Jaintias of Meghalaya $(19.91±0.02$ years) as studied by Chakrabarty (1995). The age specific mean age at first delivery shows a declining trend towards the higher age categories of women both among the Minyong as well as among the Mising women. This trend is also visible when the age specific mean age at first delivery of the Mising women of Majuli and Dhemaji are analyzed separately. This is because the mean age at marriage show a gradual increase from the higher age groups to the lower age groups and so concomitantly the mean age
at first delivery also show the same trend in both the Minyongs and the Misings. From the previous analysis of age specific age at menarche (Table 4.1) and the age at marriage of the Minyong women (Table 4.4 A), it can be inferred that these two events are intimately related with the age specific mean age at first delivery. Most of the Minyong women have entered into marriage early after the attainment of menarche and concomitantly delivered the first child quite early in their reproductive life span than that of the Mising mothers. The range of age at first delivery of the Minyongs is found to be 16-20 years, which is much lower than the range observed among the Misings (19-29 years). In addition to this, the median age at first delivery of the Minyong women (18.20±0.13 years) is quite low than that of the Mising women (22.67±0.02 years). Thus, half of the Minyong women attain motherhood before attaining the legal minimum age at marriage. Moreover, the mean interval between the age at marriage and first delivery shows a declining trend with the increase of age. The highest percentage of Minyong women show the mean interval between the age at marriage and first delivery to be 3 years, whereas, the majority of first births took place within one year of marriage among the Mising woman. This may be because most of the Minyong women married between 14-18 years when they may experience adolescent sterility. Contrary to that most of the Mising women married after 18 years of age when they rarely might experience adolescent sterility.

The average numbers of live birth to the Minyong and the Mising women in the present study have been found to be 5.22 and 4.78 respectively; which are higher than the Jaintias of Meghalaya (4.62) (Chakrabarty 1995); that of Zemi Nagas (4.5) (Bhowmick, et al. 1971), Khasi (4.5) (Nag 1965), the Khasis (3.9) (Baruah 1980); Ahoms (4.47) and Chutiyas (4.42) (Das and Das 1992) and that of the Mishmi women
(Choudhury 1993), Assamese Hindu Castes (4.71), Assamese Muslim (4.68) and Assamese Mongoloid (4.76) (Das and Das 1992). However, the average number of live birth to the Mising women is slightly lower than that of Bhuiyan of Orissa (4.92) and the average number of live birth to the Minyong women is slightly lower than that of the Santal (5.81) as studied by Deka (1991). The following might be some of the reasons for higher average live births among the Minyongs:

- The Minyong women enter into marriage quite early so concomitantly, their age at first delivery is also found to be lower than that of the Misings,
- Lesser number of couples accepts family planning devices to limit their family size,
- Higher percentage of women due to lack of education provided non-numeric response to the query of desired number of children

The present study of the Minyongs and the Misings show that the average age specific fertility tends to show an increasing trend from the lower to the higher age groups of women both in the Misings as well as in the Minyongs. In both the populations, the women of 65 years and above show the highest age specific fertility and the youngest age group of women show the lowest. This trend is also noticed when the women of two Mising populations are analyzed individually. The age specific fertility of the Minyong women shows a sharp decline in the last 15 years, whereas among the Misings, a sharp declining trend is noticed in the last 20 years. This trend is also found among the Jogis, Muslims, Ahoms, Chutiyas and Morans (Das and Das 1992) as well as among the Jaintias of Meghalaya (Chakrabarty 1995). The reason for this trend may be that the women of the younger age groups have experienced only a few years of married life and did not achieve the desired number of children. Moreover,
as the mean age at marriage show a gradual increase from the higher to the lower age
groups of women so gradually the reproductive span of women got reduced in the lower
age groups of women. In addition to this, most of the younger women are educated and
found to use family planning devices to limit their fertility when the desired number of
children is reached. Women of the older age groups have experienced comparatively
longer duration of married life and thus, had the opportunity of bearing a larger number
of children. Moreover, modern family planning devices were not available to the older
women during the time of their reproductive age.

The causes of the difference in fertility between different population groups are
difficult to explain. There are numbers of deep rooted cultural and social factors
relevant in the Indian context which are yet to be explored that influence fertility
(Mahadevan 1986; Bhende and Kanitkar 2004).

Between two successive births, a woman passes through a number of clearly
distinct physiologic stages. Ovulation does not resume immediately at the end of a
pregnancy. The delay is approximately 2 months without breast-feeding and
considerably longer in the presence of breast-feeding. Thus, breast-feeding is important
in lengthening birth intervals. Without any effective substitute for the infant's
nourishment, breast milk is essential for its survival—the death of the mother or a new
conception too soon would endanger the life of the infant. The practice of breastfeeding
is found to be universal in both the studied populations. About 99.62 per cent of
Minyong children and 99.69 per cent of Mising children are found to be breastfed.
Colostrum is not discarded in the populations. The mothers breastfed the new born
immediately within two hours after birth, particularly, after bathing the new born with
luke warm water. Those who are never breastfed among the Minyongs are given the
juice of boiled rice as well as sugarcane juice; whereas among the Misings, juice of boiled rice is given until six months and then solid foods are given. In case, a Minyong and Mising mother has insufficient breastmilk, it is reported that a Minyong mother is fed with a juice prepared by boiling the leaves of a tree (Spilanthes paniculata L.), which is locally named as marsang by the Minyongs and malsa by the Misings. The Misings, however, add powdered fruit of black pepper (Piper nigrum L; bonoria jaluk in Mising) in small quantity and a few pieces of ripe papaya (Carica papaya) in the preparation of the juice. Sometimes, chicken or pigeon meat is also added to it. The prepared juice is given to drink consecutively for a few days till the breast milk is sufficient for the baby. If the mother does not lactate at all then any lactating woman of the same clan can feed the child. Moreover, roasted fish (engo) and vegetables are tabooed for the lactating mother because they believe that consuming roasted dishes reduces the lactating capacity of the mother. The child is breastfed as long as the mother continues lactating but she tries to wean the child after its second birthday or after conceiving for the next, whichever is earlier.

It is noticed in both the populations that the duration of breastfeeding increases with the increase in birth order. The highest percentages of 1st, 2nd and 3rd birth orders, among the Minyongs, are breastfed less than 1 year; the highest percentages of 4th and 5th birth orders are breastfed up to 1-2 years and 6th and above are breastfed more than three years. Among the Misings, however, it is noticed that highest percentages of 1st to 5th birth orders are breastfed up to 1-2 years and 6th and above are breastfed more than three years.
Birth is followed by a period in which the risk of conception is zero, a situation that in traditional demographic regimes contributes to a significant spacing of births, even when this outcome is not consciously sought. Breast-feeding temporarily inhibits ovulation. This has long been known to be the main factor responsible for this phenomenon. The range of post-partum amenorrhoea (PPA) is found to range from 2 to 17 months in case of Mising and 2 months to 16 months in case of the Minyongs. It is quite evident from the study that the highest number of live births in case of Mising mothers shows a PPA of 10-11 months followed by 12-13 months; whereas, in case of Minyongs, the highest number of live births shows a PPA of 4-5 months followed by 6-7 months. Thus, menstrual cycle resumes quite early among the Minyong women after most of the live births than among the Mising women. The risk of conception becomes higher when the resumption of menses occurs early. This may be one of the reasons of higher percentage of conception and live births among the Minyongs. Only a few numbers of live births show a PPA of more than 14 months in both the populations. The average duration of PPA is observed to be comparatively higher among the Mising women (10.1 months) than that of the Minyong women (6.8 months). It is evident that the average duration of PPA increases with the increase in the duration of breastfeeding. This trend is visible both among the Mising as well as among the Minyongs. When the average duration of PPA is analyzed according to the birth order, a similar trend is found. The average duration of PPA is also increased with the increase in birth order, and this relationship is found to be highly significant (p<0.01). Thus, prolonged breastfeeding can delay the resumption of menses following a live birth leading to lengthening of the subsequent birth intervals to reduce total fertility. This result
corroborates with the studies made by Aguirre (1996); Pinto et al. (1998); Yadav and Jain (1998) and Singh et al. (2012).

The effect of education on fertility has been reported in many studies. Baruah and Das (1982) have observed that among the Khasi couples, the rate of fertility increases as the level of education decreases. Das (1993) observed that the education of couple, especially the wife’s education is very effective in fertility control. The present study also supports the earlier findings that fertility increases with decreasing educational level of husbands and wives, though increasing level of wives’ education have a stronger influence in reducing fertility in both the populations. However, it is significant to note here that fertility is found to be inversely related with the educational status of the couples and such a relation is more prominent among the couples of middle standard and above. Caldwell and Mc Donald (1981) are of the opinion that the level of education of mothers is a tool which helps them in breaking some of the traditional norms and make them relatively more independent in taking decisions within the family situation. In most of the studies conducted in India, the effect of education in reducing fertility has been detected among the women with higher education (Driver 1963; Nayar 1986; Bharati et al. 1990). This is because women with higher education automatically enter into marriage later than those without any education or barely literates and so the actual reproductive span is reduced. Moreover, these women are quite aware of the family planning devices to limit their desired family size. Another important determinant is likely to be the hypothesized relation between parental education and children’s education. If the mother’s education increases the possibility of the daughters’ education, then in families with educated wives, the overall proportion of
children being educated is higher, thereby increasing the costs and decreasing the immediate benefits of children, another rationale for reduced fertility (Basu 2002).

Large number of women of the present study is found to be engaged in various occupations. The couples where both the husbands and wives are engaged in cultivation show the highest average number of live births (Table 4.10 A) among the Minyongs as well as among the Misings. A similar result has been found by Sinha (1979). It is important to note here that the couples where either the husband or the wife is engaged in petty-business show comparatively lower average fertility than the couples where either the husband or the wife is engaged in cultivation or in skilled work. When the average number of live births is analyzed with the occupational status of the husbands and wives separately, it is apparent that the husbands and wives engaged in cultivation show the highest average number of live births in both the Misings as well as in the Minyongs. However, the lowest average fertility is shown by the husbands and wives engaged in middle professions in case of the Minyongs and the husbands engaged in high professions as well as wives engaged in middle professions show the lowest average number of live birth among the Misings. The average fertility tends to decrease with the increasing occupational status of the couples. Thus, the present study supports the earlier findings (Agarwalla 1972; Bhende 2004) that the persons engaged in services or professions have the lowest fertility, while cultivators have the highest fertility. The lowest fertility among the higher professional groups may be because of their higher educational status compared to the other occupational groups. The professional women also prefer to have less number of children as they can spare less time for the rearing of children.
The range of age at last delivery of Mising women is found to be 37-44 years and that of the Minyong is 36-43 years. The mean age at last delivery of the Mising women is observed to be $38.31 \pm 0.10$ years which is slightly higher than that of the Minyong women ($37.46 \pm 0.14$ years). But the difference between the two communities is found to be statistically significant. The mean age at last delivery of the Mising ($38.31 \pm 0.10$) as well as the Minyong women ($37.46 \pm 0.14$) are found to be higher than the Jaintia women of Meghalaya ($35.13 \pm 0.06$) (Chakrabarty 1995); Bhuiyan ($37.31 \pm 0.19$) and Koya ($36.80 \pm 0.21$) of Orissa (Deka 1991) and found to be lower than Santals ($38.71 \pm 0.12$) and Gond of Orissa (Deka 1991). It is evident from the study that the range of age at menopause of the Minyong women is found to be 45-49 years, which is lower than that of the Mising women (45-51 years) and concomitantly, the mean age at menopause of the Minyong women (46.74±0.20 years) is also observed to be lower than that of the Mising women (48.44±0.10 years) and the difference between these two mean ages at menopause is found to be statistically significant. Moreover, the average interval between the age at menopause and age at last delivery of the Minyong and the Mising women are 9.28 years and 10.13 years respectively. Some of the reasons for long interval between the age at menopause and the age at last delivery as reported by the informants are: (i) attained the desired number of children and (ii) after last delivery women conceived no more. The mean menopausal age of these two tribes are quite higher than that of the Ithing (41.94±0.99) of Manipur (Devi et al. 2007); Meitei (44.85 years) and Kabui (45.73 years) of Manipur (Singh 2006).

The mean menopausal ages of the Minyong (46.74±0.20) and the Mising women (48.44±0.10) are higher than the Jaintia women of Meghalaya (45.53±0.04) (Chakrabarty 1995) and the Sinphos (43.63±0.45) of Arunachal Pradesh (Kar and
Mahanta 1972). But the mean menopausal age of the Minyong women is lower than that of the Ahoms (48.44±0.52) of Assam (Gogoi 1972) but almost same with that of the Mising women (48.44±0.10) of the present study. The variation in the age at menopause among different populations is said to be due to variation in environmental, nutritional and genetic factors (Bhende and Kanitkar 2004). The mean age at menopause is almost similar in both the groups of Mising women and the difference is not statistically significant.

The completed fertility is a good indicator to understand the fertility level of a population (Thompson and Lewis 1980). It has been observed from the present study that fertility in the completed family is 7.10±0.22 among the Mising women and 6.89±0.12 among the Minyong women. The difference between the two groups is not statistically significant. However, the mean completed fertility of these two groups are comparatively lower than that of the Jaintia women (7.41±0.07) of Meghalaya (Chakrabarty 1995) and higher than the Ithing (5.91) of Manipur (Devi et al. 2006); Tai-Khamiyangs (4.65) and Deoris (4.38) of Assam as well as of Garos (5.21) of Meghalaya (Das and Sikdar 2010). It shows that the fertility level in completed families among the Minyongs and the Misings is fairly high in North East India.

CULTURAL VALUES RELATED TO FERTILITY AND FAMILY PLANNING

Cultural values are considered as the important determinants of fertility. Under the changing social situation, cultural values are also changing. Some studies in India and other Asian countries have cited the importance of cultural values as major
It has been observed from the present study that among the Minyongs as well as the Misings, it is mainly the husband who plays a major role in decision making in regard to acceptance of family planning methods and the number of children they desire to have. There are however, some cases where both the husband and the wife are found to take part in decision making. However, some couples who are educated, particularly the wives (mainly the matriculates and graduates) are found to take joint decisions of accepting family planning devices. But no other family members except the wife and the husband are concerned in taking decisions for acceptance of family planning methods. It has been found that the couples often take advice or gather knowledge regarding family planning methods from their friends and relatives. Nevertheless, the final decision is taken by the couples and in most cases by the husbands.

It has been observed from the present study that the total average number of desired children among the Minyong is found to be 5.10 which is higher than the total average number of desired children among the Misings (4.81). It is interesting to note that the total average desired number of children among the Minyongs is lower than the average fertility (5.22). This may be because only a few couples are found to accept family planning measures to limit the desired number of children and they have a strong desire to have at least two or three sons in their ideal family composition. But an opposite picture is noticed among the Misings. Among them, the total average desired number of children is slightly higher than the average fertility (4.78). The same trend is noticed when the two Mising populations are analyzed separately. The reason for lower average number of live birth compared to the desired number of children may be for the
reason that majority of the young and middle aged mothers of age groups 15-29 and 30-44 years have less than desired number of children as they are yet to complete their reproductive period. Moreover, the younger women of aged 20-34 years do not desire to have more than three or four children. Figure 4.20(a) shows graphically the decreasing trend in the average desired number of children toward the younger age groups in both the Misings and the Minyongs. Such a trend is also observable among the young Minyong couples also. This is because the young women are more educated, they are exposed to modern facilities like mass media and various medical facilities which help them changing their outlook.

The present study reveals an inverse relationship between the average desired number of children and the educational status of women. Sundar (1990) states that education decreases the demand or desire for more children and increases the use of contraception, thereby reducing fertility. It is evident from the present study that the average number of desired children is higher among the illiterate and barely literate women than the women with higher educational levels. The Minyong women in all the educational levels show the higher number of desired children than the Mising women. In both the populations, the older and illiterate women had non-numeric response towards the desired number of children like, “conception depends on the wish of God (Donyi:Polo).”

A look at the relationship between desired number of children and occupation of the couples, the study shows that the cultivator women show the highest average ideal number of children in both the Misings and the Minyongs. This result corroborates with the study made by Ahmed (1990) which indicates that those women whose husbands are engaged in agricultural activities desired more number of children than those
engaged in non-agricultural occupations. The women engaged in middle profession show lowest average number of desired children followed by the women engaged in petty business among the Mising and the Minyongs. It has already been referred to that the Mising and the Minyong women who are engaged in middle professions and in petty business have lower average number of live births than the other working categories.

The highest number of Minyong and Mising women desire a family composed of three sons and two daughters, followed by those who desire two sons and two daughters in their ideal family size. Most of the Minyong and Mising women desire atleast two or three sons in their family. It is interesting to note here that a considerable number of Minyong women (8.75%) desire a family size of four sons and two daughters whereas a considerable number of Mising women (16.0%) desire two sons and one daughter in their ideal family size. Mahadevan (1986) reported that the present generation express the desire to limit the family size to two sons and a daughter and would have a fourth child only if all the three children happened to be sons or vice-versa. Like any other patriarchal societies, the Mising as well as Minyongs desire sons more strongly than the daughter. The strong preference for son is clearly evident as the highest numbers of women desires to have atleast two sons and they wish to continue procreation until they beget two sons. However, it is pertinent to note that the Mising and the Minyongs also welcome daughters but either one or two and not more than that. Their ideal family composition seems to consist of three sons and two daughters or two sons and one daughter.

More than half of the couples of both the communities are found to have more than their desired number of children basically because of non-fulfillment of their strong
desire to have at least two sons. In Kerela and Andhra Pradesh also the value of a son was found to be an important determinant of high fertility (Mahadevan and Sumangala 1987). Malhi (1995) found that the fertility in India is influenced by a strong desire to acquire minimum number of surviving sons in the family. Barooah and Iyer (1994) examined religion and fertility in India and found that son bring benefits to their parents whereas daughters impose costs and is complementing a desire to have sons not to have a daughter. According to Rao et al. (1983), couples with a strong preference for sons or at least one son are likely to go beyond their desired family size if their preferences are not achieved. The next cause of having more than desired number of children is found to be the desire for one or two daughters in addition to at least two sons, particularly among the Minyong women and improper utilization of family planning devices in case of the Mising women. It has been found that most of the Mising women who adopt copper-T device for family limitation, are unable to use the device correctly or as directed and so they sometimes suffer from severe gynaecological ailments like infections and pain. Three (03) Mising women reported that they conceived after undergoing tubectomy. Among the Minyongs also, it forms one of the major factors of having more than desired number of children and one Minyong women reported that she gave birth to twin after tubectomy.

Case 3

Name- Smti. Yamir Tatin, Age-37 years, Primary school teacher,

Village- Mori, Arunachal Pradesh

My informant desired to have at least two sons and two daughters.

Her first child was a daughter and at the second time she delivered a twin pair of one daughter and a son. Third time again she
delivered a twin pair of two daughters. Thus, her original plan of having four children with two sons turned to be a failure. However, she was blessed with a son at the fourth time and then she stopped reproducing.

It is evident from the present study that most of the Mising and the Minyong couples think family planning as a process of limiting the number of children only. The birth-spacing advantage of family planning methods is known to only 13.3 per cent of Minyong and 18.12 per cent of Mising couples. Only a few Mising and the Minyong couples accepted various family planning devices at the time of the study (Table 4.26). However, more number of Mising women adopt family planning devices than that of the Minyong women. The highest numbers of Minyong women are found to adopt IUCD (8.25%), followed by oral contraceptive pills; whereas, just a reverse picture is noticed among the Mising women. Among them oral contraceptive pills form the major family planning device followed by IUCDs. This corroborates with the study by Horst (1963) who states that the use of IUCD is higher among the rural populations. It is important to note here that though permanent sterilization is used by a very few Minyong and Mising couples, but it is evident that they tend to prefer tubectomy more than vasectomy. When the respondents were asked as to why they preferred tubectomy over vasectomy, the Minyong couples reported that the men are to do hard work and hardly get time to take rest after vasectomy since they are to go out regularly to earn their bread. Women, therefore, go for tubectomy since most of them are house wives. When the Mising couples are asked the same questions, they responded that vasectomy causes physical weakness and impotency among males, in addition to reasons like males cannot take rest for long and have to do strenuous works. Moreover, some of the Mising
females responded that if the male children die and the husbands have undergone sterilization then they would not have the chance to procreate again, however if only the women undergo sterilization then in such case the husbands may marry other women and have son/sons.

The number of non-acceptors of family planning devices is found to exceed the number of acceptors in both the tribes. Couples of both these populations showed three reasons for not accepting and practicing any family planning methods and these three reasons are: fear of side effects, desire to have male children and the reduction in coital satisfaction. In addition to these reasons, some of the Mising couples stated that the devices are not very reliable. The strong preference for sons (at least two) is the major reason for not accepting any family planning methods. In order to increase the space between the issues, some Mising women go for abortion by consuming a paste prepared from leaves and roots of *Coptis teeta* (*teeta* in Mising; *mishimi teeta* in Assamese) with raw papaya fruit (*Carica papaya; omita* in Mising; amita in Assamese) and powdered bark of *Alstonia scholaris* (*singar* in Mising; *chatiyana* in Assamese). The Minyong women very rarely go for abortion by consuming the raw fruit of *Zanthoxylum rhetsa* DC (*Onger* in Minyong; *mezenga* in Assamese) or the roots of *Coptis teeta* (*Ringko* in Minyong; *mishimi teeta* in Assamese). The extract of the raw papaya in large quantity is also used for inducing abortion. Some women have reported that they used the fruit of *Annanus comosus* (*Tako* in Minyong; *anaros* in Assamese) as abortifacient, as natural fertility controlling agent. However, they could not confirm the efficiency of these herbal abortifacients. Abortion is, however, not a very common phenomenon in both the communities.
Case 4

Mrs. Mimbir Pegu, 34 years, cultivator, Kumarbari Village, Majuli

The informant had two daughters consecutively and strongly desire atleast one son. The Mising women believe that when the birth spacing is increased to atleast three to four years, the chance of having a son increases in the next birth. So when she conceived after one year of her second issue, she tried to abort the conception with a paste prepared from leaves and roots of *Coptis teeta* with raw papaya fruit of *Carica papaya* and powdered bark of *Alstonia scholaris* which was administered in empty stomach early in the morning and waited for the result. This paste is prepared by the informant herself. But unfortunately she could not abort the conception and ultimately she gave birth to healthy son who is 3 years of age now.

INFANT MORTALITY

It has been observed from the present study that among the Minyongs, out of a total of 2086 live births to 400 women, 338 are infant deaths, the infant mortality rate being 162.03; whereas, among the Misings, out of a total of 1913 live births to 400 women, 233 are infant deaths, the infant mortality rate being 121.79. Thus, the infant mortality rate is quite higher among the Minyong women than that of the Mising women. Moreover, the incidence of male infant death is higher than that of the female infant deaths in both the populations. This picture is just opposite of the overall infant death of the country because in India, female infants continue to experience a higher
mortality than male infants. Infant mortality rate in India has declined considerably (47 per 1000 Live Births in 2010). However, the rural (51) and urban (31) difference is still very high (National Health Profile 2011). The infant mortality rates of these two populations are quite higher than the national average as well as that of the Assam (58) and Arunachal Pradesh (31). Higher infant mortality rates among the Minyongs and the Mising of the present study may be because the health centres are quite far away from their villages and they traditionally prefer to deliver the child in the home rather than in the health centre. Moreover, due to the lack of education and awareness among the couples (more evident among the Minyongs), the infants are rarely immunized and taken to health centre whenever suffer from illness unless very severe. The Minyongs believe that immunization of mothers and the infants may cause harm to the infants. They prefer to take some indigenous medicines. Such kind of attitude is prevalent among both the Minyongs as well as among the Mising of the present study.

The percentages of male and female infant deaths tend to increase with the increasing age groups of the mothers in both the populations. Hobcraft et al. (1984) stated that children born to very young or to very old mothers experience more mortality compared to those born to mothers in the intermediate age groups. Ruzicka and Kane (1987) are of the opinion that the increased risk of infant death among the old mothers may be due to the maternal depletion syndrome such as undernourishment, anaemia and general weakness associated with the biological demands of excessive reproduction. The same trend is noticed when the age specific infant death of the Mising mothers of Majuli and Dhemaji are analyzed separately. The Mising mothers of Dhemaji show slightly higher percentages of age-specific infant deaths than the Mising mothers of Majuli. It is important to note here that the Minyong mothers of aged 15-19
years show comparatively higher percentage of infant death than the mothers of higher age categories, particularly up to 40-45 years. Various studies have proved that adolescent motherhood can be associated with a less sensitive parenting style and inadequate relationship between the mother and the infant. Moreover, in the present study it has been noticed that most of the infants to the adolescent mothers die due to occurrence of diarrhoea, preterm birth, inadequate delivery and post-delivery care and inexperienced parenting style. According to Friede et al. (1987) there is a strong association between young maternal age and high infant mortality and between young maternal age and a high prevalence of low birth weight. According to them, neonatal mortality decline steadily with increasing maternal age. It is interesting that the Mising and the Minyong mothers of age-groups 20-24 years and 25-29 years show preponderance of female deaths over male deaths.

Infant mortality rate is a good indicator of health and well being of a population. It has been observed in the present study that both among the Minyongs as well as among the Misings, post-neonatal mortality rates are higher than the neonatal mortality rates. The sample registration system (2012) figure for India, however, is in contrary to the present findings. According to SRS, neonatal mortality rate for India is higher than the post neonatal mortality rates. The neonatal mortality and post-neonatal mortality rates of the Minyongs as well as the Misings are higher than that of India. The Misings of Majuli show slightly less infant and post-neonatal mortality rates than that of the Misings of Dhemaji. This may be because, the higher numbers of Mising mothers of Majuli are literate and they mostly go to the nearby health centre for treatment of the babies, which is not observed in case of the Misings of Dhemaji. For the Misings of Batuwa village of Dhemaji, the nearby health centre is about 12 kms away from the
village and in absence of any other communicating facilities; they have to walk to the
PHC. This is one of the reasons for preferring delivery at home rather than approaching
the health centre. The preference of home as the place of delivery is also found among
the Minyongs. According to the elders of the society, it is their age-old tradition and
they lack faith upon the health professionals. The reasons for high neonatal mortality
might be due to the absence of proper medical care especially in the antenatal period to
the expectant mothers. Another reason for high neonatal mortality in both the tribes is
that the umbilical cord of infants after birth is cut with a sharpened bamboo strip or an
unsterilized blade or knife either by the mother herself or by the mid-wife without any
fear of infection. Malhotra (1985) has shown that in India neonatal mortality is double
in rural areas compared to the urban areas. Similarly, the chances of premature births
ending into infant deaths are 94 and 95 percent higher in comparison to the full term
births according to Gandotra and Das (1988). Infant mortality was found to be high
when (i) the age at effective marriage of mother was below 18 years; (ii) interval
between last two live births was below 18 months; and (iii) when the mother was
illiterate. Further, infant mortality was found to be high when the mother had either not
taken any dose or had taken only 1 dose of Tetanus Toxoid as compared to those who
had taken two or more doses of TT. It was also high when the baby was premature
(Gandotra and Das 1988). The reason for very high post-neonatal mortality among the
Mising and the Minyongs of the present study is the high prevalence of diarrhoea and
acute respiratory diseases of the infants. It is observed particularly among the Minyongs
that the infants are clothed unhygienically and they rarely use soaps or detergents to
clean the clothes of the infants. The cloth with which the mother wraps the child around
her back (benyop) is rarely washed. Moreover, the younger siblings are reared mostly
by the elder siblings particularly the elder sisters and they are seen playing with stray dogs as well as pigs. The mothers are rarely observed to clean their hands before feeding the infants. The post-neonatal deaths are mainly due to exogenous factors, namely epidemics caused by communicable diseases such as diarrhoea, enteritis, bronchitis, pneumonia, faulty feeding practices, poor hygiene, insanitary surroundings etc (Bhende and Kanitkar 2004).

The percentages of infant death are found to increase, particularly from the 2\textsuperscript{nd} birth order to higher birth order in both the populations. In the 1\textsuperscript{st} birth order, the incidence of infant death is quite higher among the Minyongs than that of the Mising. This is because a higher number of Minyong mothers are adolescents. However, thereafter, the percentages decrease in the 2\textsuperscript{nd} birth order and a further decrease is noticed in the 3\textsuperscript{rd} and the 4\textsuperscript{th} birth order among the Minyongs. The lowest percentage of infant death is observed in the 2\textsuperscript{nd} birth order followed by the 3\textsuperscript{rd} birth order among the Mising, whereas, among the Minyongs, the lowest percentage of infant death is observed in the 3\textsuperscript{rd} birth order, followed by the 4\textsuperscript{th} birth order. The incidences of infant deaths suddenly increase from the 5\textsuperscript{th} birth order in the Mising as well as among the Minyongs. The 9\textsuperscript{th} birth order show the highest percentage of infant death among the Minyongs and the 8\textsuperscript{th} birth order show the highest percentage of infant death among the Mising. These results are in conformity with many studies which show that the infant mortality is higher in the 1\textsuperscript{st} birth order and then decreases gradually to 4\textsuperscript{th} or 5\textsuperscript{th} birth order and then suddenly increases in the higher birth orders from different parts of the country (Agarwala 1972; Mahadevan 1986; Deka 1991). Such a result is associated with the maternal age at birth and spacing between two successive births. Sathar (1985) noted that first order children face the highest risk of death both in infancy and
childhood. Deka (1991) in his report among the tribal community of Orissa finds that infant mortality gradually decreases with the increasing birth orders. However, no such trend is observed in the present study because the incidence of infant death increases beyond 5th birth order in both the tribes. The reason for this trend is difficult to ascertain though it could be possible that the first birth order deaths are due to the young age and faulty childrearing practices of the young mothers, while the increasing deaths after 5th or 6th birth order could be due to maternal depletion syndrome.

Most of the scholars are of the opinion that inverse relations exist between education (especially maternal education) and infant mortality. Bhende and Kanitkar (2004) noted that the educational attainment of parents, especially that of the mothers, have a significant relationship with the levels of infant mortality. In the present study, percentages of infant mortality to the illiterate couples are found to be comparatively higher than that of the educated couples both among the Minyongs as well as the Misings. Infant mortality is totally absent among the couples with graduate wives and graduate husbands. Even among the matriculate couples, it is quite low. When the educational status of the husbands and wives are analyzed separately, it is clearly observed that the number of Infant death decreases with the increasing educational status of the both husbands and wives. Among the Misings, the highest percentage of infant mortality is shown by illiterate husbands and illiterate wives. The graduate husbands and graduate wives show the lowest percentage of infant mortality. On the other hand, the barely literate husbands and illiterate husbands show the highest percentage of infant mortality among the Minyongs and the graduate husbands and matriculate wives show the lowest. However, both among the Misings and the Minyongs, graduate wives do not show any instance of infant mortality, when analyzed
separately. Thus, the educational status of the couples shows an inverse relationship with the infant mortality. However, the educational status of the wives seems more important in the reduction of infant mortality. Similar results have been shown by Bharati et al. (1990) and stated that infant mortality decreases with the increasing level of mothers' education. Sathar et al. (1985) stated that education of mothers seems to be a critical factor in their ability to avail themselves of health facilities, food and other means of saving the lives of their children.

In the present study, infant mortality is found to be related to the occupation of the couples. It has been observed that among the Minyongs, the couples with cultivator husbands and wives engaged in petty business show the highest percentage of infant death. On the other hand, the lowest percentage of infant death is found among the couples in which the husbands and wives both are engaged in petty business. Whereas, among the Misings, the couples with lower professional husbands and cultivator wives show highest percentage of infant death the lowest percentage of infant death is found among the couples in which wives are middle professionals and the husbands are petty-businessman. It is evident that the couples in which both the husband and wife or either of them is engaged in petty-business show comparatively lower percentage of infant death in both the Misings as well as in the Minyongs. A similar result is also observed when the two Mising populations are analyzed separately. When the occupational status of the husbands and wives are analyzed separately, it is clearly observed that the wives engaged in middle professions show the lowest percentage of infant death and wives engaged in skilled work show the highest percentage of infant death among the Minyongs. Whereas, the highest percentage of infant death among the Misings is found among the wives engaged in lower professions. This may be because most of the
women engaged in skilled work and lower professionals are either illiterate or barely literates and as such they are unaware of proper child rearing practices and ignorant about proper health care facilities. Lower incidence among the middle and high professional mothers may be because they are more educated and thus they are more knowledgeable about hygienic conditions and childrearing practices.

The present study reveals that the prime cause of infant death is stomach ailments, mainly diarrhoea/dysentery both among the Misings also among the Minyongs, followed by acute respiratory infections. The reason for this may be due to unhygienic practices, lack of proper sanitation and unfiltered drinking water. It has been found that higher number of households lack proper sanitation and so most of the individuals resort to open-air defecation both among the Misings as well as among the Minyongs. Since the houses of these two tribes lack windows for proper ventilation and the fire-place (meram) continue to burn whole day also at night during the winter, the smoke and the lack of fresh air may have led to acute respiratory diseases to the infants.

Deka (1991) stated that among the tribals of Orissa over one-quarter of infants died due to dysentery or diarrhoea, which was the single largest cause of infant death followed by maternal factors and tetanus. The respondents described loose motion, vomiting and loss of appetite as the symptoms of such death. These infants died after a few hours of birth and were unable to suckle. The percentage infant death due to jaundice is also much higher among the Misings than among the Minyongs. This may be because of the contamination of the drinking water with the flood waters during the monsoons in the Mising areas. The Misings as well as the Minyongs never boil water before drinking. The incidence of preterm death is more common among the Minyongs than the Misings. This is definitely because of the existence of higher numbers of adolescent mothers
among the Minyongs who delivered pre-term babies than that of the Misings. The pre-
term births occurred before the 32 weeks of gestation both among the Misings as well as
among the Minyongs. The present study reveals that most of the deliveries of the
Minyongs and the Misings take place at home with the help of untrained mid-wife who
use to cut the umbilical cord with the help of unsterilized knife, blade or a sharpened
bamboo strip. Thereafter, either the mother or the mid-wife use to tie the navel of the
infant with cotton thread without any fear of infection. Such kind of practice may lead
to infection and results to death of the infant. Moreover, among the Minyongs, during
During painful parturition or when childbirth does not take place easily, the family
members sacrifice a dog or a fowl to appease the spirit (uyu) responsible, which is
locally known as nippong. Sometimes a priest (miri), if on hand, is called upon to do
the ritualistic sacrifice. The Minyongs believe that the spirits of women who die during
childbirth become nippong uyu and when needs propitiation induce troubles during the
childbirth. Such a ritual is also evident among the Misings of the present study.

Among the Minyongs, if the mother dies immediately after delivery, the child is
never breastfed by any woman because they believe that feeding such a child may bring
the same fate as the biological mother of the baby. Such a child is to be reared entirely
by the father by feeding either rice soup or sugarcane juice until solid foods can be
given. According to the informants, such children rarely survive till its first birthday.
However, such a belief is not found among the Misings of the present study.

One of the factors associated with high rate of infant mortality is high fertility. It
is observed from the present study that the 1st parity mothers do not show any cases of
infant death and the percentages of infant death increases with the increasing parity of
the mothers. The 9th parity Mising mothers and the 8th parity Minyong mothers
experience the highest incidence of infant death whereas the 2nd parity Mising mothers and the 3rd parity Minyong mothers experience the lowest incidence of infant death. Thus, the study indicates a trend of increasing deaths with an increase in the number of live births and an inverse relationship with the parity and the percentage of living children. However, Srinivasan et al. (1979) stated that the association of high infant mortality with high fertility cannot be predicted with certainty for a developing country though the association is proved in the developed countries.

Another physiological constraint on unrestricted fertility is the extent of foetal wastage that is, abortion and still births. Bourgeois Pichat (1952) has suggested that, on an average, about 30 per cent of conceptions result in foetal deaths, and that if such deaths are eliminated, the gross reproduction rate may increase by about 15 per cent. In the present study, the percentage of pregnancy wastage is quite higher among the Minyong women than among the Mising women. It is observed that the majority of pregnancy wastages occurred due to miscarriage in both the populations, however, the percentage occurrence of miscarriage is found to be quite higher among the Minyongs (8.86%) in compared to the Mising (4.88%). The percentages of total pregnancy wastages show an increasing trend from the younger to the older age groups of women among the Minyongs as well as among the Mising. Gandhi (1989) has also reported that the average pregnancy wastage among the Maheshwaris was more in the older women than in the middle aged women and young women. The present study however, do not corroborate with the findings of Murthy et al. (1989) who reported higher incidence of pregnancy wastage in women below 25 years of age. The present study is in conformity with the findings of Buzarbaruah and Phookan (1986) who reported that pregnancy wastage is high among the younger and older mothers while it is found to be
low among the middle aged mothers. However, the addition of the instances of induced abortion in the younger age groups of Mising women (20-24 years and 25-29 years) have raised up the total percentage of pregnancy wastages in these two age groups. The prime reason for resorting to induced abortion by 23 Mising women is the failure of oral contraceptive pills in controlling conception immediately after a delivery and they believe that as the birth interval increases from the first live birth, the chance of conceiving a male child increases. These women desire a small family size of three to four children and they desire to have at least one or two sons. This phenomenon is observed in both the populations of Misings. The Mising women of Dhemaji (8.82%) show a higher percentage of pregnancy wastage than that of the Mising women of Majuli (7.76%). Some of the causes of pregnancy wastage as reported by the Minyong and the Mising women are hard work at the time of pregnancy particularly during the harvesting time, accidents, weak health condition of the mother and an act of the malevolent sprits of those mothers who died during parturition.

Case 5

Mr. Tayo Tatin, male, 24 years, cultivator

Mr. Tayo Tatin is a father of two children. When his wife suffered from terrible complications during her third childbirth, he along with the family members consulted a priest (miri). The priest entered into trance and advised him to sacrifice a fowl immediately to appease the spirit (nippong uyu) responsible for obstruction of the delivery passage. However, unfortunately, according to Mr. Tatin, the spirit could not be appeased and the baby was born dead. Had the spirit appeased, the baby would have survived. The
stillborn baby (*oripe*) was then placed into a scooped out pumpkin by him and hang on a tree branch of an unfrequented jungle in the belief that the *nippong uyu* would see the result and would not do this again in their life.

**Case 6**

Mrs. Nampo Padun, female, 34 years, cultivator, Batuwa village, Dhemaji

The informant reported that her first conception was spontaneous abortion (at two months of pregnancy). As usual she was working in the agricultural field and during her return after long hours of work she was carrying water from the nearby tube-well but suddenly slipped and fell down from the ladder leading to the platform of the house. At that time, she was feeling weak and tired. This resulted in her miscarriage.

**Case 7**

Mrs. Ambika Doley, female, 43 years, cultivator, Kumarbari, Majuli

The informant reported that her 5th conception resulted into stillbirth and then consecutively she experienced two spontaneous abortions. During her 5th pregnancy, she felt the labour pain prior to her full term and an elder woman was called to assist her during delivery. As she was experiencing severe labour pain, it was thought to be the act of the spirit of a dead mother to extract some kind to sacrifice from the family members. So the husband immediately consulted a priest and he advised him to sacrifice a fowl in the name of the spirit. In the mean time, she was given
boiled water with ginger juice of ginger by her sister-in-law. But unfortunately, after long hours, she gave birth to stillborn baby boy. Perhaps the spirit, informant said, was not appeased with the sacrifice. Her next miscarriages were also thought to be the act of the same spirit.

OPPORTUNITY FOR NATURAL SELECTION AND CONTINUITY AND CHANGE OF CERTAIN CULTURALLY CODED SURVIVAL STRATEGIES OF THE MISINGS OF ASSAM

In particular, natural selection tends to alter the gene pool in such a way that increases the average reproductive fitness of the population. In other words, this increase in reproductive fitness caused by natural selection is called adaptation (Cohen 2010). Rogers and Ehrlich (2008) find that the process of natural selection can act on human culture as well as on genes. Moreover, cultural traits affecting survival and reproduction evolve at a different rate than other cultural attributes. So, implicitly and uniquely, the process of natural selection in human populations is to a degree regulated by socio-cultural factors.

It has already been mentioned that the prime objective of the present study is to look into the biocultural adaptation of the Misings of Assam who were erstwhile hill-dwellers of Arunachal Pradesh and they appear to have dwelt in the Siang region for long centuries, before they migrated to the Brahmaputra valley (Taid 2012). The Minyong tribe can be regarded as one of the closest cognates of the Misings in this respect, who inhabit the Siang region of Arunachal Pradesh (Taid 2012). The Misings at
present inhabit the flood plains of the Brahmaputra valley which is quite different to their erstwhile ecological habitation of hilly terrains. In spite of such differences, they are living so successfully in the present habitats that they are now the second largest Scheduled tribe (plains) in Assam (Census Report 2011). The reproductive success of the Misings in the flood plains clearly show that they are adapting successfully and able to exploit and manipulate the ecology. This study is aimed at offering an answer to the question of how much of selection that may come from differential survival and how much from differential fertility among the Minyongs and the Misings. The approach to the question is to study the differential contribution to the next generation made by various individuals comprising the populations; this is done by studying survival and productivity.

The opportunity for natural selection of the Misings as well as the Minyongs is calculated by Crow's as well as Johnston and Kensinger's formulae. In the present study, Crow's indices show that the total index of selection intensity (I) is quite higher among the Misings (0.3793) than among the Minyongs (0.3444). This is because the index of selection due to the fertility component (I_f) is quite higher among the Misings (I_f =0.1087) than among the Minyongs (I_f =0.0426). In addition, the proportion of the survivors up to the reproductive age is also higher among the Misings (0.8038) in comparison to the Minyongs (0.7755). Though, the Minyongs show higher average number of conceptions per mother than the Misings, but due to higher proportions of child mortality, the proportions of survivors decrease up to the reproductive age and above. Thus, index of selection due to the fertility component (I_f) is contributing more towards the total intensity of selection than the mortality component among the Misings of Assam. However, an opposite picture is noticed among the Minyongs of Arunachal
Pradesh. Among them, the index of selection is due to the mortality component \( I_m \), i.e. the mortality before the reproductive age, is acting more strongly than the fertility component in the total intensity of selection.

When the total index of selection intensity \( I \) is calculated by Johnston and Kensinger’s formula, the value of ‘\( I \)’, surprisingly, becomes higher among the Minyongs (0.5524) than among the Misings (0.4894). This is because, in Johnston and Kensinger’s formula, a new component of the population is added which is equally responsible for shaping the size of the population, i.e., the index of selection due to embryonic mortality. As the proportion of embryonic mortality is very high among the Minyongs (0.1547) in comparison to the Misings (0.0798), the total intensity of selection becomes higher among the Minyongs than among the Misings. Therefore, the index of selection due to embryonic mortality and child mortality (mortality prior to the reproductive age) form the prime movers of selection intensity among the Minyongs. Of these two indices, the index of selection due to child mortality seems to be higher contributor to the total index of selection. Whereas, among the Misings, it is the index of selection due to reproductivity and survival up to and beyond the reproductive age form the prime contributor. Thus, among the Misings, the variation of the genes will be more in the gene pool than the Minyong gene pool due to higher proportion of survivors. Moreover, among the Minyongs, due to higher embryonic and child mortality, higher proportions of potential genotypes are eliminated prior to birth and reproduction from the gene pool.

On analyzing the two Mising populations separately, the index of selection due to fertility component is contributing more towards the total index of selection among the Misings of Majuli whereas, among the Misings of Dhemaji, the index of selection
due to the mortality component is contributing more towards the total index of selection. This result of the Misings of Dhemaji and the Minyongs of Arunachal Pradesh is similar to the general observation in many Indian populations (Reddy & Chopra, 1990) that show that differential mortality contributes more to the total index of selection intensity (I) than the fertility component.

The importance of culture becomes clear in the contrast between the developed and the developing societies at this point. In socio-economically developed societies, it is primarily variation in fertility rather than mortality that shape variation in lifetime reproductive success. In developing countries, the variation in mortality has a greater contribution to selection, particularly the variation in infant and child mortality that is associated with infectious disease and deficiencies in child nutrition (Stearns 2010). However, the mortality component is contributing more in the selection intensity among the Misings of Dhemaji and the Minyongs; its contribution is higher among the Minyongs, particularly the embryonic mortality. Kapoor et.al. (2003) found an inverse relationship between the index of selection due to mortality (I_m) and social categories in their study of selection potential among 24 Himalayan population of India. The calculated data of the present populations indicate that 'I' is tending more towards the lower limit of the range of the Indian populations. A similar trend is observed with the index of selection due to mortality (I_m). But, interestingly, the values of index of selection due to fertility (I_f) of the Misings as well as the Minyongs are below the lower range of the other Indian populations so far studied, however, the Minyongs show the lowest value for this. The values of 'I' is the highest among the Singpho of Arunachal Pradesh (1.020; Padmanabham and Jaswal 1982) and is the lowest among the Punjabi Sonar of Shillong (0.107; Jaswal 1977) among the North-East Indian populations so far
studied. The values of ‘I’ of the Misings and Minyongs suggest that the intensity of selection is operating moderately but the modes of operation are different among the Misings and the Minyongs.

THE CONTINUITY AND CHANGE OF CULTURALLY CODED SURVIVAL STRATEGIES OF THE MISINGS

Culture is man’s most important instrument of adaptation. As with any other species, human populations are shaped by the usual forces of natural selection. Now-a-days, scientists regard culture to be a powerful force of natural selection. People adapt genetically to sustain cultural changes, like new diets and this interaction of gene and culture works more quickly than other selective forces, leading some practitioners to argue that gene-culture co-evolution is the dominant mode of human evolution (Laland et al. 2013). Local social groups must adapt their organizations of social relations, if there is to be order, regularity and predictability in patterns of cooperation and competition and if the groups are to survive as viable units. A long history of survival of the Misings in the flood plains of Brahmaputra valley of Assam has equipped the community with a rich traditional repertoire of knowledge that has enabled them to live and beneficially adjust with annual floods in many ways. The important elements of this traditional repertoire are the innovation of early signs and warnings of thunder rains and floods; acquiring the mode of livelihood, pattern of house building, food preservation, practice of traditional medicine and healing systems; knowledge and skills in making rafts and boats, rice-beer (apong) preparation, fishing and collecting of edible products from the forests. Some of these traditional practices are enriched with modern knowledge as well as acculturation with the neighbouring communities. Since they were
erstwhile hill dwellers and till today show socio-cultural affinity with the Padam-Minyongs of Arunachal Pradesh so certain cultural traits that the Misings carried from their hilly habitation must have conferred adaptive value to survive in the flood plains areas of Assam. The continuity of these cultural native elements in a new and different ecological setting clearly indicates that these elements are beneficial and enhancing their ability to cope with the stresses and constraints of the new environmental setting.

Most of the families of Kumarbari village in Majuli lost many of their cultivable lands in the last 10 years due to intense erosion due to flood. As a result, they are now facing the problem of land fragmentation. However, an old man states, "Our ancestors moved to these fertile lands of Brahmaputra valley from the hills of Arunachal Pradesh during ancient times following downstream flows of different rivers. On reaching these plains lands, they thought these areas to be useful for a living because they were always a riparian tribe, loved fishing, moreover, the wind of the river seemed pure, and these riverbank areas seemed free from waterborne diseases, particularly, cholera. In addition, the land seemed very fertile to grow different crops. The river Brahmaputra will revert back our lost land once again." The legends related to the migration of the Misings from the hills of Arunachal Pradesh to the plains of the Brahmaputra valley also refer to the fact that the Misings practiced shifting (jhum) cultivation prior to the migration as well as they continued for some time in the plains after migration (Bhandari 1992; Pegu 2012). The growing contact with the neighbouring Assamese peasantry has its impact over the Misings and in due course of time (as we observe today) developed permanent settlement in the form of villages, adopted permanent cultivation and gradually discarded shifting cultivation. Thus, developed a new mode of subsistence in the new habitat. Now-a-days, many families have surplus production and many of them are,
therefore, engaged in petty-business. As informed by the villagers of both the Mising villages, they cultivate three kinds of paddy- *sali, ahu* and *bao*. The popularity of the *sali* paddy is decreasing due to silt deposition on the agricultural land during the floods and on the other hand, the cultivation of *bao* is on high. *Bao* paddy, as it is suitable and ideal for marshy and swampy land grow well in the flood-prone and waterlogged areas of the Brahmaputra valley where the Misings inhabit. However, the cultivation of *bao* paddy is a new inclusion into the Mising subsistence mode, which is not cultivated by the Minyongs. It is also observed that the Misings of the two villages are more inclined towards the practice of mixing *bao* and *ahu* cultivation which ensures that atleast one crop type survives in case of early or high floods. It is interesting to note here that the cultivators of both the Mising villages also grow millet (*ayak*). The Minyongs also grow millet (*ayak*) in the winter season when rainfall is scanty. The millet is quite resilient to flood condition as well as grow well during the drought season. Due to such kind of resilience in two extreme seasons, millets are harvested well in the ecology of the Misings (flood-prone) as well as the Minyongs (drought in winter season). As it is harvested in the pre-flood season, it ensures food security and nutrition for the Misings of these two villages. Millets are well preserved during and post-flood situation, so ensure nutrition mainly for the children, pregnant and lactating mothers of the community if the paddy crops are damaged by strong flood currents.

It is observed that though the primary occupation of the Misings of these two villages is cultivation, but due to environmental and its concomitant socio-cultural consequences, the occupation of the Misings is changing at present. The reasons are:
1. Continuous and gradual silt deposition over the agricultural field during the flood in the Kumarbari village,

2. fragmentation of limited land holdings due to population expansion and overexploitation of forest areas in both the Mising villages,

3. Those who are literate up to matriculation and above are more interested in doing government services and petty-business (seems more viable and lucrative) rather than cultivation. In recent years, young women are seen engaged in selling their traditional woven cloths in the nearby market centers like Kamalabari (Mising women of Kumarbari village, Majuli) and Dhemaji town (Mising women of Batuwa village, Dhemaji) earning Rs 3,000 to Rs 4,000 monthly.

The Misings of Kumarbari village in Majuli opine that if the floods are not severe, i.e. when the maximum flood level is below 5 feet, then it is to some extent beneficial to the cultivators. This is because flood deposits rich alluvial soil on their cultivable land thus making it fertile. Moreover, flood very often carries logs of wood which when dried, can be used in the *meram* for cooking. In order to get rid of flood water, they build their new houses atleast 6 feet above the ground.

**Case 8**

Name-Shri Amol Doley, Age-36 years, Village- Kumarbari, Majuli

Shri Doley narrated that he lost two bighas of agricultural land due to soil erosion. At present he only two bighas of land for cultivation. Being unable to maintain his family with the produce of these two bighas of land, he with his wife resorted to petty-business of traditional garments since 2006. The earning from the
business is also not sufficient for maintaining a large family. Somehow, he is living from hand to mouth. He, therefore, wants his two children to do some professional jobs in future. He also fears that erosion if continues in the present rate may make him landless.

In the studied Mising villages, joint family system is still popular but nuclear families are now-a-days preferred by the young generations. The families are patriarchal in nature. The main reason for choosing nuclear families over the extended/joint families as described by the informants is the adoption of new occupational pursuits due to fragmentation of cultivable land and population expansion. This has resulted into the adoption of new occupational pursuits like skilled works, petty business and lower and middle professional jobs which do not require collective effort like in agriculture.

The Misings love fishing. Some of the indispensable fishing implements used by the Misings are their traditional originals which are also seen among the Minyongs like turji which is very similar to edil of the Minyongs, made of cane and fine bamboo. It is used mainly in riverside to catch small fish during the monsoon. Raashak made out of a single bamboo stick splited in one end only, is the simplest of all fishing devices and very similar to porang used by the Minyong. Di-bung-made of single, long bamboo to which a pointed metallic head is attached and used in deep water, is an another fishing implement evident among the Minyongs. Besides, these, they also use hooks (boroki), nets (eshup), koloya and dingora-made of split bamboo used to catch fish in deep running water during monsoon. These are imbibed from the Assamese fisherman.
Besides intra-household cooperation, inter-household cooperation is also
important for cordial inhabitation in a particular territory. This enhances the chances of
survival and perpetuation. Among the Misings, certain cooperative activities, which
according to the informants are age-old characteristics, help them to enhance solidarity.
These cooperative activities are- rikbo-ge’nam and dagle’ka-ale’k, organized by the
family whenever required, is prevalent among the Minyongs also. Rikbo-ge’nam is the
activity when a person is unable to cultivate his field due to certain reason and he
requests the fellow villagers for their cooperation. On the other hand, dagle’ka-ale’k
refers to the cooperative activity of the villagers along with the owner for the
construction of a new house or sometimes repairment of the old house. These two
cooperative social activities are indispensable for shelter management and thus
existence of the population in that environment.

**Case 9**

Name-Shri Lakhidhar Pegu, Age-34 years, Village- Kumarbari,

Majuli

Mr. Pegu states, “After my marriage in 2003, I decided to live in a
separate house. However, building a house alone or with the family
members is a cumbersome work and almost impossible. Cooperation from the fellow villagers is necessary. Therefore, I
decided to approach the youths of the village to help me constructing the house. The males helped in extraction of bamboo
stripes and their matting and the females help in the transportation
of the roofing material, mainly the thatch materials from the forest.
This cooperative activity of constructing a house is known as
dagle'ka-ale'k, anybody from the village can contribute their effort to build a new house. It required about 45 days completing the construction of the house. On the last day, I arranged a feast with leaf-packed rice (porang-apin) and pork (adin) to those who helped me in this activity. Such a feast is a gesture of thanks to the villagers for their cooperation.

The clan (opin) organization of the Misings is important from the adaptive point of view. The clan among them works as a small band and the members belonging to a certain clan help each other during the crisis. Generally, it is observed that member of one or two clans inhabit a Mising village. The study villages - Kumarbari in Majuli is composed of Pegu and Doley clans, whereas, Batuwa village in Dhemaji is composed of Mili and Padun clans. In the Minyong village two clans are apparent- Tatin and Jerang; both belonging to the Kuming moiety. It is interesting that like the Minyongs, among the Misings also if a mother dies immediately after childbirth then any women belonging to the clan of the father can help in rearing the child.

Case 10

Name-Shri Tasung Padun, Age-63 years, Village- Batuwa, Dhemaji

Mr. Padun is a cultivator and the father of six children, of which four are daughters and two are sons. His two sons married by elopement (dugla-lanam) and so he had to pay comparatively heavy bride-price (alig) to the parents of his daughter-in-laws. He paid a sum of Rs 2,150 and some brass utensils to the parents of his elder daughter-in-law and Rs. 2,500 with brass utensils to the
parents of his younger daughter-in-law. He borrowed Rs 4,500 from Mr. Delo Padun (shop-keeper) of the same clan. His paternal kins helped him to arrange the feast. He states, ‘besides the villagers, his clan members have helped him collectively in the entire procedure of social acceptance (orai-binam) and the feast. It is a great relief when the clan members bless the newly wed couple in the gathering.’

Like the Minyongs of Arunachal Pradesh, the Mising have ke’bang (village council) which controls the social, political, law and order aspects of the village. The original function of the ke’bang of a village in the past in the hills was to settle group rivalries and inter-tribal feuds as well as to decide the martial policies (Pegu 2005). But after migration, the cordial relationship of the Mising with the neighbouring populations, the original function of the ke’bang has been lost. However, as told by the informants, the Kébangs of the two Mising villages perform certain functions keeping the welfare of their community in mind. It directs the members of the community to do something and not to do something.

☐ It directs the members of the community to do something and not to do something, for instance, it restricts fishing particularly during the breeding season,

☐ Earlier, it was the responsibility of the ke’bang to decide a proper place, which could be converted into an agricultural land. However, as the forestland has become scarce and the population has increased, hence there is not enough land in the area where people can establish new villages or can expand their
agricultural land. With increasing impacts from floods, the nearby forests are overexploited and completely denuded by the late 1990s.

- Before the arrival of the monsoon, the ke’bang members check the condition of the embankment of the rivers. The ke’bang also takes necessary steps to erect their traditional embankment of bamboo and wooden logs through villagers,

- Sometimes the type of crops and cropping pattern are also regulated by the Ke’bang based on the resource availability,

- The ke’bang gives important decisions for selection of dates for the arrangement of festivals like ali-ai-ligang, po:rag and dobar puja and also which villages are to be invited for celebration, the important guests to be invited on these auspicious occasion, etc.,

- Particularly, the ke’bang of the Kumarbari village in Majuli is seen very active in developing the Mising language in association with the Mising Agom Ke’bang (Mising Literary Body).

The Misings call their village do-lung and their traditional house as okum in their dialect. Right from the process of the selection of a site for a new village to the design of a house show definite adaptations to the physical conditions, particularly towards flood and protection from wild animals. The platform house of the Mising is very similar to that of the Minyongs. However, the adaptive benefits of same house type are different between these two tribes. Among the Minyongs, the houses on piles protect the inmates from wild animals of the neighbouring forests. It also protects the inmates from dampness. The Misings select a site for habitation through a ritual known as amo-yukang performed by the priest (mibu). Through this ritual, the Misings predict the probable entrance of ants, termites or other insects into their habitats as well as the
occurrence of various diseases of the inhabitants. It is interesting that such kind of traditional belief may be interpreted scientifically. The entrance of insects and termites refer that the soil is marshy which might be the ideal breeding grounds of various micro-organisms as well as termites and insects that may destroy their house quite quickly. The separation of the rice pairs in the holes may occur due to the movement of underground burrowing animals, which may affect their cultivation as well as settlement.

When the design of Mising houses is analyzed from the perspective of adaptation towards floods, it is observed that the *chang-ghars* protect the inmates from floodwaters. The stilt-houses of wooden pillars have adjustable floors to match with the water level of the flood. However, such adjustment is restricted to less than one foot. It is also observed that in Kumarbari, the newly constructed houses have high floors than the earlier constructed ones, particularly from the year 2004 onwards. This is because the level of flood in these two villages has risen consequently from 2004. In Kumarbari, the height of floors ranges from 6 feet to 8 feet whereas in case of Batuwa village, it ranges from 5 feet to about 8.5 feet above the ground. The Minyongs also live in stilt pattern of houses, similar in design with the Misings. However, the height of the houses in the concerned Minyong village ranges from two feet to 4 feet, much lower than that of the Mising of these two villages. Such raised platform houses of the Minyongs protect them from the attack of wild animals. Like the Mising, Minyongs use the space underneath of floor for various purposes like rearing of pigs, storing firewood, keeping materials required for occasional mending of the house. They also place the handloom in that space. In case of the Mising, floodwaters flush out and clean out the dirt of their habitation to their great advantage. Recently, some of the Mising families who are
economically sound, have constructed their platform house with concrete pillars and posts (posts or the pillars are directly exposed to flood water) so that the wear and tear becomes less but such kind of modifications have lost the flexibility of the floors to flood levels. Generally, such kind of house is more than 7 feet to 8 feet high from the ground in Kumarbari village and about 6.5 feet to 8.5 feet high in Batuwa village.

Both the Misings and the Minyongs construct the granary (*kumsung*) at a considerable distance from the dwelling house so that the accidental fire from the fireplace (*meram*) cannot reach it. It is also constructed on a raised platform like the dwelling house. So flood cannot destroy the stored grains. The Minyongs also call their granary as *kumsung*-built and designed similarly as the Misings. The floor and the four walls are made of bamboo matting woven very thickly and then plastered with mud mixed with cow dung. Such plastering is done so that insects, rodents and other animals cannot enter the granary. During the flood situation, the granary can be accessed with the help of a boat and the ladder.

**Case 11**

Name-Shri Tine Pegu, Age-40 years, Village- Kumarbari, Majuli

Mr. Pegu, a cultivator as well as a petty-businessman, said that ‘*chang-ghar* is essential in Majuli where flood is a constant phenomenon.’ He constructed a traditional Assamese house after his marriage with a raised mud foundation like the caste populations but with the increasing level of the flood from 1999, it is almost impossible to live in such kind of houses during monsoons. Besides, after the recession of flood, much time is required to dry-up the inside of the houses. He also adds up that
such houses require costly repairing after every monsoon. Due to these reasons, he has built up a *chang-ghar* (about 7 feet from the ground) near to this Assam type house in 2008, which is much beneficial in challenging floods.

According to the villagers of both the Mising villages, in the last 10 years, some of the well-to-do families are seen constructing Assam-type houses with C.I. sheet roofs. However, they informed that the Assam-type houses are not advantageous during the floods and so these families have built up small *chang-ghars* near to their earthen-plinth houses.

The Misings being a riparian tribe, closely associated with nature for its every basic need, traditionally predict flood or other natural calamities through certain signs of nature. These signs are known by each and every Mising individual. They notice the unusual activities of the animals (cattles); insects and ants; birds (*chatak; Clamator jacobinus*); flowering pattern of the mango trees and *talayang akhan* (*Alpinia allughas Retz Rose*). One popular way of predicting flood is by *asin-tagir-* study of the liver of a sacrificed pig during *Dobur-uyui* ritual by the *miboo* (priest). If the liver has some dark spots at the middle, it signifies a forthcoming devastating flood. Such kinds of signs are age old and the Misings strongly believe that these early signs are very reliable. Thus, they have used the nature in every possible way to thrive in the challenging conditions of the nature.

Boat occupies an important position in the Mising way of life because it is the only means for transportation during monsoons. However, boats as used by the Misings are rarely found in the Minyong society. The Mising generally make boats from wooden
planks of *azar* tree (*Lagerstomea speciosa* L.Pers) or *champa* tree (*Michelia champaka* L.), which are locally available in the forest. According to them, the planks of these trees last longer under water. The elongated nature of the boat helps to keep more loads lengthwise and thus helps rowing smoothly in the strong currents of the floodwater. Moreover, such structure of the boat helps the boatman at one end to cut-across the boat easily with little effort. The slight upward bend of the front portion of the boat, which is unique to them, is advantageous to apply force with hand while moving to the bank of the river as well as to move the boat swiftly in strong upstream current of the floodwater.

The food habits of the Misings in Kumarbari and Batuwa village are now-a-days very similar to the neighbouring Assamese communities. However, some of their food habits still have similarity with the Minyongs of Arunachal Pradesh. These indigenous food items with plants available nearby show their tremendous traditional knowledge to identify and utilize natural resources as foods and nutrition. Scientific investigation on wild plants shows that they have a very high nutritional potential, and their nutritional value is greater than that of some green cultivated vegetables (Yildirim *et al.* 2001; Thayer 2006). Wild plant species provide minerals, fiber, vitamins and essential fatty acids, enhance taste, and colour in diets. In addition, they have anti-bacterial, hepatoprotective and anticarcinogenic properties, and therefore, having medicinal values (Heywood 1999). Both the tribes believe that tender shoots of *onger* (*Zanthoxylum rhetsa*) kills the tap-worm that is present in pork-meat and fights stomach infection. During religious events and in festivals, *apong* (home brewed rice beer) is inevitable among the Misings as well as the Minyongs. Though, making of rice-beer (*apong*) for domestic consumption is an age-old practice, but now some families
process and sell both traditional rice-beer and the cheaper country liquors for income to the neighbouring caste populations. The basic process of *apong* preparation among the Misings and the Minyongs of the present study is almost the same. However, they show certain minute differences in the variety of raw materials used in the preparation. This is because of the availability of ingredients in the ecology they live. The Minyongs generally use millet ragi, locally known as *mirung* or the red variety of rice, locally called as *amkel* or sometimes with a mixture of *mirung* and *amkel*. On the other hand, Misings use boiled rice (*Oryza sativa*). The millet ragi (finger millet) grows abundantly in the adi areas of Arunachal Pradesh. A study by Kardong *et al.* (2012) have showed that a suitable dose of *po:ro apong* helps in increasing perspiration and thus helps in releasing the toxins, extra salt and heat from the body. This is one of the reasons for preferring the *po:ro apong* during the summer season by the Misings. Moreover, *po:ro apong* can be preserved to two to three months, so it is used as a drink during the time of flood. The Misings of the present study has a traditional natural way of expecting and monitoring the fermentation process of *po:ro apong*. When the fermentation process is on for about 3 to 4 days, a mild aroma comes out, which indicates that the process is set right. After 8 to 10 days of fermentation a mawkish and a strong pungent smell attracts small flying insect towards it. The appearance of this mawkish smell and the sudden arrival of the fly and their subsequent disappearance without affecting the fermented mash (*ponyak*) in the *ta:suk*, indicates that the *apong* is almost ready for filtration. 

**Case 12**

Mrs. Jamini Pegu, Age-41 years, Village- Kumarbari, Majuli

Mrs. Pegu uses six different medicinal plants for the preparation of *epop*; the cake prepared mixing rice powder with leaves of some
herbs presumed for use as yeast in preparing rice beer. She learnt
the process of making *epop* from her mother and these plants are
quite available in the nearby forest. The plant parts that she
normally uses are-

- *Piper nigrum L. (Bonoria jaluk)* - tender leaves and fruits-
  antiseptic in nature,
- *Adhatoda vasica Nees (Bahaka)* - tender leaves and shoots-
  has healing properties,
- *Hydrocotyle sibthorpioides L. (Manimuni)* - entire plant is
  used, not more than three plants - it increases appetite,
- *Costus specious (Jom lakhuti)* - bark-can be used as
  astringent,
- *Lygodium flexuosum L. (Kopojungi)* - tender twigs and
  leaves-has antifungal property.
- *Artocarpous heterophyllus Lamk (Bilangaai)* - leaves

She states, ‘all these plants have medicinal properties and so po:ro apong is used
in various ailments including dysentery and body pain. As po:ro apong is considered
auspicious with astringent properties, so a small drop of it also given to a new born
baby.’
Case 13

Mrs. Yamo Tatin, Age-44 years, Village- Mori, West Siang
District, Arunachal Pradesh

Mrs. Tatin informed that every household prepares *apong* and serves it as a drink through the whole day for every member of the household. She narrates, 'Very frequently red variety of rice (*amkel*) is selected for preparation because *apong* becomes sweeter when made with *amkel* than to millet (*mirung*). De-husking of *amkel* or *mirung* is done in the *kipar* (traditional mortar). The required quantity of *amkel* or *mirung* is then boiled, mixed properly with husk charcoal and the needed amount of powdered medicinal cake (*seea*). Now, the mixture is kept in the *apupatak* (a bamboo basket) wrapped and tightly covered with banana (*ekkam*) leaves. After two days, the contents are mixed again intimately and kept in the same way. When a special mawkish smell comes out after about two or three days, it indicates that, the *apong* is ready for extraction. It is first extracted with hot water and then with cold water. These two extracts are mixed together during consumption. The fermented mash is then preserved in a tightly covered basket called *perop* and the extracted *apong* is in the *kaksur*. She also adds that the *apong* made from fermented *mirung* is stronger than the *apong* made of *amkel*. Moreover, *mirung* requires more time for proper fermentation than that of *amkel*. She normally uses the tender shoots of *koppi*, seeds of *taye*, tender and green leaves of
**rukji,belang**, and **hinche**, grains of **tami** and a few fronds of **ruk dik** (ferns) to prepare the **seea** along with grinded **amkel** in proper proportions.

Like the Misings, the Minyongs also has a sacred place in their house known as **kordang** where **apong** is prepared. They have the similar belief that the **apong** is not only a drink for relish but it provides instant energy and relief from various ailments.

The Misings of the two villages have two distinct traditional fish (**ongo**) preservation techniques, which not only preserve the taste and the flesh well but also its nutritive values. The smoked fish prepared by traditional way can be preserved for atleast six months. The Misings use this smoked fish during the time of scarcity. The smoke from the **meram** always preserves **ngosan** from ants and insects. The second method of fish preservation is the preparation of **namsing**. Generally, the small sized fish are preferred for this recipe. It is a grinded mixture of dried fish with wild arum which can be preserved for more than six to seven months. It is relished during the drought and monsoons. **Ngosan** and **naming** is prepared after the recession of flood when excess quantity of fish is trapped.

The dialect of the Mising show strong affinity with that of the Adis of the Siang valley of Arunachal Pradesh (Needham 1886, Lorrain 1910, Pegu 2005, Taid 2012). The Linguistic Survey of India (Vol. III) categorizes Mising dialect into the North-Assam group of the Tibeto-Burman branch of the Sino-Tibetan family, which also includes Adi dialects of Arunachal Pradesh. Though, monosyllabism is one of the main characteristics of Tibeto-Burman languages, but in the Mising and the Adi dialects, monosyllabism is not dominant (Pegu 2005; Taid 2012). The traditional rhapsodies of
the Misings and the Minyongs, known as *aabangs* are the repertoire of traditional words. These are handed down generation after generation by the peers of the families as well as by the *miris* among the Adis and the *miboos* among the Misings. Various scholars (Pamegam 1972, Kagyung 1972, Datta 1992, Taid 1992) have pointed out striking similarities between the dialects of these two tribes in terms of kinship terminologies as well as *abangs*. According to Mipun (1993), 'such similarity is visible because the Misings were once a tribe of Arunachal Pradesh.' Language and dialect are the prime media of communication and acculturation. Due to evolution of lingual communication during the course of human evolution, particularly in the Homo-erectus form, the process of evolution has been greatly escalated (Jurmain *et al.* 2011). Adaptation in a new habitat requires immense support and cooperation from the fellow members of the society, which is possible through language, same language gives the feeling of unity and learning foreign languages of the neighbouring communities helps in tolerating each other as well as understanding the world-view of one another. It was found in the concerned fields of the Misings that the process of acculturation in case of adoption of Assamese language is as popular as their own. Many scholars (Mipun 1993, Pamegam 1972, Kagyung 1972) state that the Misings arrived the plains of Assam during the Ahom reign and since then they started to adopt the Assamese language. Learning this language has helped them to survive cordially with the neighbouring Assamese community. At present, it is observed that they have adopted various Assamese words in their dialect. It is noteworthy to mention here that the *Mising Agom Ke’bang* (Mising Literary Society) at present trying to develop Mising literature and script for its preservation. The youths in both the villages of Misings are found to be associated with this purpose of *Agom Ke’bang*. These youths are of the view that the
Assamese language may replace their language, if proper written literature is not developed.

**Case 14**

Dr. Neelo Pegu, Age-41 years, Village- Kamarbari, Majuli

Dr. Pegu is a doctor in the Gormur Public Health Centre. He states, 'my father always encouraged me learning Assamese language. I went to Kamalabari Primary and M.E. school for education and later admitted to Assam Medical College, Dibrugarh for M.B.B.S. Being educated in Assamese medium and living in close proximity with the Assamese people, I am quite fluent in this language. I deal with Assamese patients daily for diagnosis and treatment. Like my father, I encourage my two children to speak Assamese along with Mising. We generally speak our own language in the family. I want my children to be well educated and so planning to send them in good colleges of Assam, where they need to communicate in Assamese. Assamese language is necessary for us. As our language is not developed fully, so we have no alternative.

**Case 15**

Mr. Nahan Panging, Age-49 years, Village- Batuwa, Dhemaji

Mr. Panging is a petty-businessman who sells stationary items in his small shop. He states, 'Assamese language is a must for communication with the neighbouring villagers as well as his customers. I would not be able to do dealings if I do not know
Assamese. I have to go to Dhemaji town to buy items that I sell in
my shop. Assamese language is one of the survival strategies for
my living. I feel the same for the Mising community.’

The traditional healing practices of the Misings of the concerned villages
have much similarity with that of the Minyongs of the present study. The indigenous
knowledge of plant products and their medicinal value is strikingly similar in both the
tribes. It is a common belief in both the tribes that when a man falls sick, the immediate
reaction of the family is to consult a miri (in case of Minyongs) or a miboo or hattula
(in case of Misings). He is supposed to know the uyus responsible for the evil
happenings of the individuals. The use of plants or plant products for healing ailments is
found to be very common among the Misings and the Minyongs of the present study.
The study finds that both these tribes have almost the same perception and knowledge
on the plant products used for medicinal purposes. Besides the miri and the miboo or
hattula, the Mising and the Minyong women have tremendous knowledge on the
medicinal plants. Most of these plants tend to cure diarrhoea and dysentery, which are
very common among them and occurs due to intake of contaminated water, which in
case of this tribe may occur during floods. The Misings in the present habitats of Assam
have utilized to the fullest some of the traditional cultural repertoire of knowledge
which are strikingly similar to the Minyongs of hilly terrain of Arunachal Pradesh
which have made them so unique culturally to other communities of Assam. The
present cultural repertoire of the Misings is a fusion of hilly cultural elements as well as
acculturated elements of the plains communities of Assam which are so well blended
that these are making them survive successfully in the flood prone areas of the
Brahmaputra valley of Assam.