

**A STUDY ON NUTRITION, FERTILITY
AND MORTALITY AMONG THE AHOM
OF ASSAM**

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*A Research Project
Submitted to the Institute of Social
Change and Development, Guwahati*

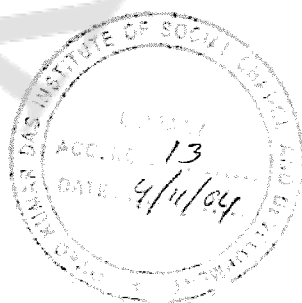
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Miss KANTA CHAKRAVARTY

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Submitted to the Institute of Social
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SUPERVISOR'S CERTIFICATE

Certified that the project report, A STUDY ON NUTRITION, FERTILITY, AND MORTALITY AMONG THE AHOM OF ASSAM , submitted by Smt. Kanta Chakravarty to Institute of Social Change and Development, Guwahati as a Rajib Gandhi Scholar was carried out under my direct supervision.

The data incorporated in the project report are authentic and have been collected by Smt. Chakravarty on the basis of intensive field work carried out by her under my guidance.


4.4.94
(S. SENGUPTA)

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Before presenting the report of my research project, I must mention with great pleasure ~~a fine words~~ ^{the} regarding kind co-operation, help and proper guidance etc., ^{of} from the institute, teachers and other people without which it would not have been possible to complete this study.

~~At the very~~ ^{very} outset, I take this opportunity to express my thanks and gratitudes to the Institute of Social Change and Development for the financial assistance to take up the project.

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Kanta Chakravarty
(Miss Kanta Chakravarty)

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CHAPTER - I

I N T R O D U C T I O N

The study of fertility and mortality ^{as these are} ~~are~~ is essential ^{to} ~~due~~ to their fundamental determinants of ~~the~~ ^{population growth} population growth and also for understanding ^{of} human population. Demographers use the term 'fertility' to designate child bearing. According to Lewis and Thompson

4 ✓ fertility is the actual reproductive performance of a woman or groups of women. The rate of fertility may vary from population to population because of various reasons. The reason may be demographic ; such as, age at menarche, age at marriage, age at menopause, etc. as well as may be socio-economic in nature.

'Mortality' is the most traumatic and final of the vital events. Fertility replenishes the society while mortality is a form of attrition. Infant mortality is used as an indicator of the general health status of a population. To establish the standard of health and for health planning, the study of infant mortality is essential. The type and number of determinants of infant and childhood mortality are so innumerable and diverse in nature that it is indeed difficult for a single researcher to do justice in this field. The determinants of infant, child and adult mortality vary across different geographical and cultural groups as well as in the developed and developing countries.

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It has been observed that the levels and patterns of fertility vary considerably in various sub-groups of the same population. These sub-groups may be based on residence, whether urban or rural ^{and} social and economic status in terms of educational attainment, family type, occupation, religion, etc. Therefore, a study of differential fertility is useful in identifying the factors which determine fertility levels among various sub-groups.

Studies reveal that age at menarche varies from population to population because of various factors such as nutrition, environment, heredity and as such it is of considerable interest for population geneticists and human biologists. According to Farner (1960) menarcheal age depends on the combined action of genes at many different loci. Menarche is one of the major factors for differential fertility (Ghosh and Kumari, 1973) and it gives the opportunity for selection. Menopause is also another important reproductive variable. The female age at marriage and its effect on fertility is also a much-investigated topic in the field of demography.

Differential fertility and differential mortality acting individually or jointly are the most fundamental events of natural selection which is one of the major evolutionary factors that brings about changes in the genetic make up of a population. Crow (1958) devised the

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'index of selection intensity' which estimates the maximum possible selection in a population on the basis of fertility and mortality. These estimates ^{are} also useful for comparisons between geographic and socio-technical variants of regional populations.

It is now an established fact that nutrition influences growth and development, ^{as well as} and fertility rates to a great extent. Good nutrition is an indispensable component of healthy life. It may be assumed that fertility parameters are influenced by maternal and child health and nutritional status. It is generally believed that malnutrition produces increased morbidity, leading to excessive mortality in infant and young children, as a result fertility remains high and population growth is excessive.

Nutritional status of an individual or a community can be assessed in a variety of ways depending upon the resources and circumstances, which include dietary and deficiency sign surveys, biochemical tests and application of anthropometry. Since various physical dimensions of the body are considerably influenced by nutrition any departure from normalcy can easily be detected. Some of the more sensitive body measurements such as weight^f, chest circumference, head circumference, upper arm circumference and their ratios among themselves and with body length or stature together with subcutaneous fat and muscle development serve as useful indicators of nutritional status.

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There has been considerable development in the field of demographic studies and research in India in the last three decades. Various workers have done researches on fertility and mortality among various Indian population. Mukherjee (1961) in a sample survey in Calcutta, considered different aspects of fertility rate and differential fertility. Driver's (1963) study in Central India reveals that there was a consistent relationship between fertility and educational level, i.e., higher the educational level of women, lower the fertility.

North-east India is the homeland of a number of ethnic groups. But considering the wide range of regional, ecological, ethnic, socio-economic and cultural variations prevailing in this region, studies on demography of NE Indian population are scarce. To mention a few : Saruah and Das (1975-76) studied fertility and educational level among the Khasi women of Meghalaya. Das et. al. (1980) reported information on fertility and mortality from the Ahom, Mishing, Deori, Chutiya and Kolar population of upper Assam. Das (1985) studied fertility and mortality differentials among the Khamiyang and the Juring population of Jorhat district in Assam.

The effect of nutrition on fertility and mortality ^{of the} Indian population have been reported by many scholars. Gopalan and Kaidu (1972) found a relationship

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between malnutrition and relatively low fertility. Mahadevan et. al. (1986) provide evidence^f association of culture and nutrition with infant and childhood mortality. Rao (1988) showed that mortality rates were found to be higher in communities where there was a high fertility and poor nutritional status; he also reported that under-nourished women had high incidence of miscarriage and abortion. Bharati and Basu (1990) reported^f existence of negative relations between nutrition, on the one hand, and fertility and mortality on the other. However, similar studies from north east India is conspicuous by their absence.

The primary objective of the present project has been concerned with the collection of fertility and mortality data which include conceptions, miscarriages still-births, live births, multiple-births, infant and toddler mortality etc. from the Ahom population of Upper Assam and their statistical analysis.

The second objective of the present study are to compare the Ahom population ~~inhabiting~~ in two ~~contrast~~ settings (i.e. isolated rural sample and acculturated exposed urban sample) to detect the effect of geographical distance, socio-cultural difference, etc.

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Though the Ahoms were originally Thai or Shan speakers, ^{after} coming to Assam, gradually, they abandoned their languages in favour of Assamese. By the seventeenth century they became Hinduised.

At present, the Ahoms are met with in large numbers in the Upper Assam districts of Dibrugarh, Sibsagar and Lakhimpur.

MATERIAL AND METHOD

The study was conducted among the Ahoms from two villages - Tiphuk in Sibsagar district and Chiring Gaon in Dibrugarh District. The investigation was carried out from the month of November, 1993 to the month of January, 1994. Chiring gaon is very close, (1 km. away only) to Dibrugarh town. Considering the location of the village near ~~to~~ the town ~~ship~~, all weather road communication, presence of health and Govt. Offices within 1 km. of radius, (more exposed situation) the Chiring Gaon represent an urban population on the presumption that the village is exposed to and benefited by the urban facilities maximally. The village Tiphuk on the other hand is about 15 km. away from Moran town and as such represent a rural population (less exposed situation).

The data were collected through specially designed fertility schedule to obtain information through indepth interview on fertility performance and various other factors relating to fertility. To study the health of the mothers, anthropometric measurements such as height and weight besides several other girth measurements were collected following standard methods. Standard equipments and standard techniques (Martin 1928, Sciner and Lourie 1969) ^{2000/1/1} adopted for the purpose.

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The survey concerned 189 evermarried women of which 89 are from Tiphuk village (rural, less exposed situation) and 100 are from Chiring Gaon (urban, more exposed situation). Proper care was taken to exclude related individuals in the sample. Women whose husbands are alive and have at least one children ^{are} only interviewed. The collected information was also cross checked.

The data has been showing mainly by percentage distribution. In some cases, the mean values with respective standard error have also been calculated. The test ^{of} ~~for~~ significance has been applied for the purpose of comparison. The probability levels has also been checked following Fisher (1953). The selection intensity has been calculated after Crow (1958) and also from Johnston and Kensinger (1971). For calculating body build of the Ahom women, Pignet (c.f. Krogman, 1971) index has been applied.

We propose to present the findings of the study in the following manner. After this brief introduction, in the second chapter, a comparative analysis of the relationship between family types and fertility has been presented, which is followed by comparative analysis of maternal education and fertility (chapter III). In the fourth chapter, age at marriage of the Ahom women and its influence on fertility has been analysed. The fifth chapter deals with

the comparative analysis of maternal age, and birth order in one hand and fertility on the other. In the sixth chapter, comparative study of body build of mothers and fertility is attempted. In chapter VII impact of place of residence on fertility has been presented. Lastly in chapter VIII, the whole work have been summarised and conclusions have been deduced.

CHAPTER - II

FAMILY TYPE AND FERTILITY

Fertility is related to various socio-cultural and biological factors of a population. One of the important socio-cultural factors which can influence the number of birth is the type of the family. According to Davis (1957) family is the key variable responsible for fertility in under developed areas.

Several studies conducted in India in different regions, at different points of time, with different research designs, came out with a common finding that the joint family registers lower fertility in comparison to the nuclear family (Bebarta, 1966 ; Bakshi and Malakar, 1969 ; Aird, 1958 ; Poti and Datta, 1960). Two factors seem to have contributed towards reducing the fertility in the women belonging to joint families : a longer interval between the age at the consummation of marriage and the age at the birth of the first child and, also, a higher rate of total pregnancy wastage (Bebarta, 1968). On the other hand, two studies, one from Singur, a rural area in west Bengal (Mather, 1962) and another from Central India carried out by Driver (1960) have reported no relation of fertility to family type.

Barring the few studies mentioned above, the possible relationship of family type with fertility and mortality in specific socio-economic groups have not been

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fully explored in the Indian context, especially at the micro-level. Data from ^{the} north-east India is conspicuous by their absence in this regard. Therefore, in this present chapter an attempt has been made with a view to finding out the relation between family type (i.e. joint and nuclear family) with fertility and mortality, if any, among the Ahom of rural and urban area.

It is seen that in both the sample^s, the mean age ^{at} first conception is comparatively higher in women belonging to joint family and in both the category^{ies}, urban sample exhibit higher mean age at first conception than the rural sample.

The mean number of conception as well as live-birth per married women of all ages is much higher in nuclear family^{ies} than that of the joint family^{ies}. However, turning to percentage frequency of total live births, the rate is much higher in joint family^{ies} than those found in nuclear family^{ies} of both the settings.

It is also apparent from table II-1 that in both the rural and urban sample^s, mothers of nuclear families have higher incidence of abortion rate than mother of joint families. It is interesting to note that not a single case of abortion is reported ^{among the} in mothers of joint families, from urban area. The table also shows that incidence of

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still-births in both the rural and urban areas are comparatively higher in nuclear families than the joint families. Thus, the total reproductive (embryonic) wastage in nuclear families of rural sample is 6.58% and that of joint families is 5.65%. In urban sample, such rate in nuclear families is 9.86% and in joint families it is only 1.05%. The same is true in case of pooled Ahom (rural + urban) sample also.

The pre-reproductive mortality of Ahoms in relation to family type has also been set out in Table-II-1. Among rural Ahoms, mothers of joint families experience higher incidence of infant and juvenile mortality than the nuclear families whereas child mortality rate is much higher in nuclear families than the joint families. Among urban Ahoms, the rate of infant and child mortality is found to be higher in joint families than in nuclear families. However, juvenile mortality is completely absent in joint families. In the pooled sample of Ahom, mothers of joint families experience higher infant, child and juvenile mortality than mothers of nuclear families.

In other words, the total pre-reproductive wastage in joint families ^{and also} are found to be higher in both rural and urban samples as well as in the pooled sample of Ahom.

Thus, it is evident that fertility and mortality ^{are} closely associated with family types. The nuclear family registered a higher total fertility rate over the joint family. However, in them, the reproductive (embryonic) wastage also exhibit a higher rate comparatively. Total pre-reproductive mortality rate demonstrates similar and consistent patterns of distribution in both the samples and higher rate with regard to this variable can be correlated with joint family types.

TABLE II-1

Fertility & Mortality by family type among the Ahoms

DEMOGRAPHIC PARAMETERS	RURAL AHOMS		URBAN AHOMS		AHOMS (R+U)	
	Joint family (N=35)	Nu- clear family (N=54)	Joint family (N=28)	Nu- clear family (N=72)	Joint family (N=63)	Nu- clear family (N=126)
Age at first conception	19.60 ± 0.51	19.35 ± 0.46	21.96 ± 0.89	21.40 ± 0.43	20.65 ± 0.51	20.52 ± 0.33
Total conception	124	243	95	294	219	537
Mean number of conceptions	3.54 ± 0.41	4.50 ± 0.27	3.39 ± 0.45	4.08 ± 0.23	3.48 ± 0.30	4.26 ± 0.18
Mean number of live birth	3.34 ± 0.39	4.20 ± 0.25	3.36 ± 0.42	3.68 ± 0.19	3.35 ± 0.28	3.91 ± 0.15
Total live birth	117 94.35%	227 93.42%	94 98.95%	265 90.14%	211 96.35%	492 91.62%
Male	66 53.23%	116 47.74%	52 54.74%	124 42.18%	118 53.86%	240 44.69%
Female	51 41.13%	111 45.68%	42 44.21%	141 47.96%	93 42.46%	252 46.93%
Abortion rate	6 4.84%	13 5.35%	-	23 7.82%	6 2.74%	36 6.70%
Still birth rate	1 0.81%	3 1.23%	1 1.05%	6 2.04%	2 0.91%	9 1.67%
Total repro- ductive (embryonic) wastage	7 5.65%	16 6.58%	1 1.05%	29 9.86%	8 3.65%	45 8.38%

Bio demographic parameters	RURAL AHOMS		URBAN AHOMS		AHOMS (R+U)	
	Joint family	Nu-clear family	Joint family	Nu-clear family	Joint family	Nu-clear family
Infant mortality rate	7 5.98%	8 3.52%	3 3.19%	6 2.26%	10 4.74%	14 2.85%
Child mortality rate	2 1.71%	5 2.20%	2 2.13%	4 1.51%	4 1.90%	9 1.83%
Juvenile mortality rate	3 2.56%	4 1.76%	-	2 0.75%	3 1.42%	6 1.22%
Total pre-reproductive wastage	12 10.26%	17 7.48%	5 5.32%	12 4.52%	17 8.06%	29 5.90%

CHAPTER - III

MATERNAL EDUCATION AND FERTILITY

It is generally believed that education leads to improved knowledge of, and favourable attitude towards birth control and better communication between husband and wife. Education can make child bearing relatively safe and improve the health of the entire family. Educated women are more likely to marry at a late age, postpone child bearing, use family planning methods and seek prenatal care when pregnant.

The effect of education on fertility has been reported in many studies. According to Caldwell and McDonald (1981) education of mothers is a tool which helps them in breaking some of the traditional norms and makes them relatively more independent in taking decisions within the family situation. Palloni (1981) has shown that literacy has a much greater influence on child mortality than on infant mortality.

Several surveys in India reveal that the education of woman is an important factor for determining the fertility rate. Mysore population study (1961) reported that the average number of children born to women in Bangalore city who were illiterate or educated upto middle standard was higher than that of women who were educated upto high school or more. Driver's (1963) study on Central

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India also reveals that there were a consistent relationship between fertility and educational level, i.e., higher the educational level of women, lower the fertility. Hussain (1970a, 1970b) showed a steady decline in General Fertility Rate with increasing education. Bharati and Ghosh Dastidar (1990) showed that negative relations exist between maternal education and both fertility and mortality.

The National Sample Survey (NSS) reports, 1960-61 and 1961-62 ~~years~~, showed a decrease in the average number of children born alive with an increase in women's education (NSS 1967, 1970). It is well established that decline of fertility in Kerala is due to the high literacy level of women there. Bhowmik's (1970) study on Zemi Nagas of North East India also reveals that literate women have a lower level of fertility than ^{illiterate} non-literate women.

Education of the mothers is the most crucial determinant of infant mortality (Gandotra et al., 1982 ; India, Registrar General 1983 ; Ruzicka and Kamit Kar, 1972). Khan et al., (1986) has pointed out that the education of the mother has a strong bearing on infant mortality.

In this chapter, an attempt has been made to investigate the correlation between maternal education with fertility and mortality among the Ahom women.

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For the purpose of the present study the educational level of Ahom women ^{has been} ~~are~~ broadly classified in two groups :

Less educated : Illiterate and those who were educated upto primary (Class IV) level.

Educated : Women who were educated ^{up to} class V or more.

The data of both rural and urban Ahom women shows that the fertility level declines considerably with an increase in the educational level of women. In rural sample, fertility rate of less educated mothers of all ages is 4.86 and 2.89 for the mothers who are educated. Similarly in urban sample total fertility rate of less educated mothers of all ages is 4.75 and that of mothers who are educated is 3.14. In the pooled sample of ^{the} Ahoms (rural + urban) also the trend remains the same. It also appears that in both the samples lower educational level occurs generally among the older mothers than the younger ones.

It is also apparent from table III-2 that with regard to pre-reproductive mortality, in both rural and urban settings, less educated mothers in all the age groups exhibit much higher fertility rate than the educated mothers. The total fertility rate gradually growing up as the age group of the mother became higher. Among ^{the} rural Ahoms, there is a remarkable decline in infant and child mortality from the less educated mothers to educated mothers. However juvenile

have
 mortality rate, increased from 0.93% to 3.85% with increasing literacy level (i.e. from less educated to educated level). In urban sample, the findings is just reverse. In them educated mothers experience higher infant and child mortality than less educated mothers, but juvenile mortality rate ^{has} declines in them. *been found to be lower among them*

In both the rural and urban sample, less educated mothers have higher incidence of still-births than educated mothers. Among rural Ahom, though abortion rate slightly declines from 5.24% to 5.07% with increasing educational level, ~~as~~ ^{the} among urban Ahom, it sharply increases from 2.83% to 7.69% with increasing education of mothers. Thus, in the present study, it appears that maternal education plays a considerable role in determining the decline of fertility ^{and} mortality.

TABLE III-1

Live Births and Fertility Rate by
~~Maternal Education among the Ahom.~~

by age groups and educational
 status

Age group (in yrs.)	Rural Ahoms		Urban Ahoms		Ahom (R+U)	
	Less educated (N=44)	Edu- cated (N=45)	Less Educated (N=28)	Edu- cated (N=72)	Less Educated (N=72)	Edu- cated (N=117)
15 - 19 yrs.	2 (2.00)	7 (1.17)	-	-	2 (2.00)	7 (1.17)
20-24 yrs.	4 (2.00)	9 (1.50)	-	6 (1.20)	4 (2.00)	15 (1.36)
25-29 yrs.	16 (3.20)	18 (2.25)	-	9 (1.29)	16 (3.20)	27 (1.80)
30-34 yrs.	31 (4.43)	23 (3.22)	4 (4.00)	40 (2.50)	35 (4.38)	63 (2.74)
35-39 yrs.	25 (5.00)	27 (3.38)	9 (3.00)	42 (3.00)	34 (4.25)	69 (3.14)
40 *	136 (5.67)	46 (4.60)	120 (5.00)	129 (4.30)	256 (5.33)	175 (4.38)
All ages	214 (4.86)	130 (2.89)	133 (4.75)	226 (3.14)	347 (4.82)	356 (3.04)

The figures within parentheses indicates
 fertility rate.

TABLE III-2

Embryonic and pre-reproductive mortality by Maternal Education among the Ahom's

Demographic parameters	Rural Ahom's		Urban Ahom's		Ahom's (R + U)	
	Less educated (N=44)	Educated (N=45)	Less educated (N=28)	Educated (N=72)	Less educated (N=72)	Educated (N=117)
Total conception	229	138	142	247	371	385
Total live birth	214 93.45%	130 94.20%	133 93.66%	226 91.49%	347 93.53%	356 92.47%
Abortion rate	12 5.24%	7 5.07%	4 2.82%	19 7.69%	16 4.31%	26 6.75%
Still birth rate	3 1.31%	1 0.72%	5 3.52%	2 0.81%	8 2.16%	3 0.76%
Total reproductive (embryonic) wastage	15 6.55%	8 5.60%	9 6.33%	21 8.50%	24 6.47%	29 7.53%
Infant mortality rate	12 5.61%	3 2.31%	3 2.20%	6 2.65%	15 4.32%	9 2.53%
Child mortality rate	5 2.34%	2 1.54%	2 1.50%	4 1.77%	7 2.02%	6 1.69%
Juvenile mortality rate	2 0.93%	5 3.85%	1 0.75%	1 0.44%	3 0.86%	6 1.69%
Total pre-reproductive wastage	19 8.68%	10 7.69%	6 4.51%	11 4.86%	25 7.20%	21 5.90%

CHAPTER IV

AGE AT MARRIAGE AND FERTILITY

In every society marriage is the only way of legal reproduction of children. Age at marriage is known to influence the fertility performance of women, in the sense that if the age at marriage is low, women start having ~~their~~ children at an early age, and these children, in their turn, begin to procreate early. Efforts are being made to raise the age at marriage to control population growth.

Whether raising the age at marriage has any direct impact on population growth, has been a subject of much discussion. Nevertheless, it is expected to produce some indirect beneficial effects. It is believed that in case age at marriage goes up, the fertility rate will come down. The indirect effect of raising age at marriage may be considered to be more important, for women marrying later are likely to have more opportunities for education and employment, ^{and} will be more matured ^{when ~~as~~ they} ~~while entering~~ marriage. All these factors have implications for their fertility performance. Mothers would be relatively more mature/to take proper care of the children. As a result, the prereproductive wastage would be less. Rao et. al, (1970) observes that with the increase in age at marriage there would be a decrease in pregnancy wastage and infant mortality, and more and more couples are likely to adopt small family norm. Consequently, the quality of life may improve in the families which adopt it. They are likely to complete their family early.

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Matsunaga (1969) has analysed the vital statistics data of 1956 of Japan and reported that the rate of still birth ^{is very high} ~~increases very significantly~~ in mothers below 19 years and above 35 years of age, as well as with high order of birth.

In this chapter, an attempt has been made to investigate the relationship between age at marriage and fertility performance of Ahom women.

The table IV-1 shows that in both the rural and urban samples, the percentage frequency of total live birth of mothers who married before 18 years is fairly low than the mothers who married at a late age and the live-birth frequency is highest among those who are in intermediate position in this regard.

The table also reveals that in ^{the} rural sample, the abortion rate is 7.19% in mothers below 18 years, 2.56% in mothers between 18-20 years and 5.15% in mothers above 20 years. In urban sample, it is highest (10.00%) in mothers above 20 years, more or less similar in lower age categories, i.e., 3.65% in mothers below 18 years and 3.57% in mothers who married between 18-20 years. In the pooled sample of the Ahom, (rural + urban) the rate of abortion is highest (8.02%) among those who married ~~most~~ ^{late} ~~late~~ ^{ly}, 5.52% in mothers below 18 years and comparatively low (3.06%) in mothers who married between 18-20 years.

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In case of still birth, the table shows that in both rural and urban samples the rate is fairly high in mothers who married earlier than 18 years.

Thus, it is apparent from the table that the rate of total reproductive (embryonic) wastage in rural and urban samples, increases very significantly in mothers having very early marital age, ~~and amongst most adults marry.~~

The table shows that in ^{the} rural sample the mothers who married before 18 years of age experience higher incidence of child mortality and the mothers who married 20 years or older, shows higher juvenile mortality, while infant mortality is highest in mothers who married between 18-20 years. In urban sample the mothers under 18 years shows higher incidence of child and infant mortality. With the increase of age at marriage the rate of mortality decreases in urban area. In the pooled sample, ~~of them~~, the table shows that with the increase of age at marriage the rate of pre-reproductive wastage as a whole decreases.

This analysis thus reveals that age at marriage among the Ahom, seem to affect fertility noticeably. It appears that the women who are married at a late age (20 years and above) as well as those who marry at an early age (below 18 yrs.) exhibit perceptable disadvantage condition with regard to reproductive wastage (both pre natal and post natal). While the figures for those in ^{between} these two extremes (between 18 years to 20 years) indicate the ^{opposite} converse.

TABLE IV - 1
Fertility and Mortality by age at marriage among the Aboms

DEMOGRAPHIC PARAMETERS	RURAL ABOMS			URBAN ABOMS			ABOMS (R + U)		
	AGE AT MARRIAGE (IN YRS.)			AGE AT MARRIAGE (IN YRS.)			AGE AT MARRIAGE (IN YRS.)		
	Below 18	18-20	21 +	Below 18	18-20	21 +	Below 18	18-20	21 +
Mean age at marriage	15.72	19.04	22.75	15.70	19.14	23.90	15.71	19.09	23.48
Number of women	39	26	24	30	29	41	69	55	65
Total conception	153	117	97	137	112	140	200	229	237
Mean conception	3.92±	4.50±	4.04±	4.57±	3.86±	3.41±	4.20±	4.16±	3.65±
Total live birth	140	113	91	126	106	125	268	219	216
	91.50%	96.58%	93.81%	93.43%	94.64%	89.29%	92.41%	95.53%	91.14%
Mean live birth	3.59±	4.35±	3.79±	4.27±	3.66±	3.05±	3.88±	3.98±	3.32±
Abortion rate	11	3	5	5	4	14	16	7	19
	7.19%	2.56%	5.15%	3.65%	4.57%	10.00%	5.52%	3.06%	8.02%
Still birth rate	2	21	1	4	2	1	6	3	2
	1.31%	0.85%	1.03%	2.92%	1.79%	0.71%	2.07%	1.31%	0.04%
Total reproductive (embryonic) wastage	13	4	6	9	6	15	22	10	21
	8.50%	3.42%	6.18%	6.57%	5.36%	10.71%	7.59%	4.37%	8.86%

Contd.

Demographic Parameters.	RURAL AHOMS			U. RAN AHOMS			AHOMS (R + U)		
	Age at Marriage (In yrs.)			Age at marriage (In yrs.)			Age at Marriage (In yrs.)		
	Below 18	18-20	21 +	Below 18	18-20	21 +	Below 18	18-20	21 +
Infant mortality	4 2.86%	7 6.19%	4 4.34%	4 3.13%	3 2.83%	2 1.60%	8 2.99%	10 4.57%	6 2.78%
Child mortality	4 2.86%	2 1.77%	1 1.09%	3 2.34%	2 1.89	1 0.80%	7 2.61%	4 1.83%	2 0.93%
Juvenile mortality	3 2.14%	2 1.77%	2 2.19%	1 0.78%	-	1 0.80%	4 1.49%	2 0.91%	3 1.39%
Total pre-reproductive wastage	11 7.86%	11 9.73%	7 7.62%	8 6.25%	5 4.72%	4 3.20%	19 7.09%	16 7.31%	11 5.10%

CHAPTER - V

MATERNAL AGE AND FERTILITY

women can conceive and give birth to children within certain age limits. A woman becomes biologically fecund (capable of bearing a child) with the onset of menstruation. Her capacity to bear children comes to an end with the onset of menopause.

Child bearing of females is not uniform throughout the reproductive span. The woman's age is an important factor when her reproductive capacity is considered. ^{For} ~~Some period of~~ time after menarche ^{females} ~~remain~~ sterile ~~in human females~~. This period is known as "Adolescent Sterility" (Montagu, 1957). The period of adolescent sterility also varies from population to population. A woman's capacity to bear children reaches the highest level at 30 to 35 years, after which it gradually ^{starts} declining.

It is well known that varieties of chromosomal abnormalities, frequency of still-birth, abortion occur in association with increased maternal age. Many congenital defects are manifested increasingly with advancing birth order. Frequency of still-birth, abortion as well as multiple birth also increases along with advancing maternal age as well as birth order. Thus, it naturally creates an academic curiosity to analyse the present Ahom data along these lines.

The rate of still-birth according to birth order and sex are set out in table V.1. In rural area, the percentage of still-birth is found in 1st and 2nd birth order and again in 6th and 9th birth order. There is a gap between 2nd to 6th birth order. The percentage of still birth in all these birth order is exactly equal (0.29%). It is also apparent that the frequencies of male still birth (0.86%) ^{rate} is much higher than female still-birth (0.29%) rate. In urban area, frequencies of still-births is concentrated in between 2nd and 8th birth order. There is not a single case of still birth reported in the first and after 8th birth order. Here too, the percentage of male still birth (1.37%) is found to be much higher than females (0.55%).

Frequency of still birth according to maternal age are shown in table V.2. In rural area, the incidence of still birth is found to be highest (0.86%) after 40 years of the mother's age. Only one case (0.29 %) is found in the age group of 20 - 24 years. In urban area, the table shows that the frequency of still births are completely absent before 30 years of mother's age, but uniformly occur thereafter. After 40 years, the percentage of still-birth is found to be highest (1.37%). Thus, it is apparent from the table that the incidence of still-birth increases with the age of mother.

Table V. 3 shows the frequency of abortion according to birth order. From the table it reveals that in rural area,

frequencies of miscarriage occurs from 1st to 6th birth order along with gradual increase of percentage. The highest incidence of miscarriage (1.63%) is found in the 5th birth order which is closely followed by the 4th birth order (1.09%). The incidence of miscarriage is completely absent after the 7th birth order. On the other hand, in urban area, frequencies of miscarriage are found almost in all the birth order. The higher percentages (1.03 %) are found in the 1st and 3rd, followed by 2nd birth order (0.77%). The percentage then decreases with the increase of birth order.

Frequency of abortion according to maternal age are shown in table V. 4. The data shows that in rural area, incidence of abortion are found after 20 years age of mothers. In urban area also, the picture is same. The table also reveals that with the increase of mother's age the incidence of abortion also increases in both the areas.

Table : V.1

Frequency of Still-birth according to Birth order
and Sex.

Birth order	Rural Areas				Urban Areas			
	Male	Female	M + F	Male	Female	M + F		
	No. of Birth	Still Birth (%)	No. of Birth	Still Birth (%)	No. of Birth	Still Birth (%)	No. of Birth	Still Birth (%)
1st	47	1 (0.29)	41	-	82	1 (0.29)	44	-
2nd	33	1 (0.29)	43	-	76	1 (0.29)	40	3 (0.82)
3rd	32	-	28	-	60	-	34	-
4th	31	-	19	-	50	-	28	-
5th	13	-	18	-	31	-	19	-
6th	15	-	8	1 (0.29)	23	1 (0.29)	8	1 (0.27)
7th	5	-	3	-	8	-	5	-
8th	3	-	2	-	5	-	3	-
9th	3	1 (0.29)	1	-	4	1 (0.29)	-	-
10th	2	-	-	-	2	-	-	-
11th	1	-	-	-	1	-	-	-

The figures within parantheses indicate percentage.

Table V. 2

Frequency of Still Birth according to Maternal age.

Mother's age group (in years)	Rural		Urban	
	No. of birth	No. of Still- birth	No. of birth	No. of Still- birth
15 - 19	9	-	-	-
20 - 24	14	1 (0.29%)	6	-
25 - 29	34	-	9	-
30 - 34	54	-	45	1 (0.27%)
35 - 39	52	-	52	1 (0.27%)
40 +	185	3 (0.86%)	254	5 (1.37%)
All ages	348	4 (1.15%)	366	7 (1.91%)

Table V. 3

Frequency of abortion according to Birth order and place of residence

Birth order	Rural		Urban	
	No. of conception	No. of miscarriage	No. of conception	No. of miscarriage
1st	89	1 (0.27%)	100	4 (1.03%)
2nd	78	2 (0.54%)	87	3 (0.77%)
3rd	63	3 (0.82%)	71	4 (1.03%)
4th	54	4 (1.09%)	55	2 (0.51%)
5th	37	6 (1.63%)	35	2 (0.51%)
6th	23	3 (0.82%)	20	2 (0.51%)
7th	11	-	10	2 (0.51%)
8th	5	-	6	1 (0.26%)
9th	4	-	2	1 (0.26%)
10th	2	-	1	1 (0.26%)
11th	1	-	1	-
12th	-	-	1	1 (0.26%)
Total	367	19 (5.18%)	389	23 (5.91%)

Table V. 4

Frequency of abortion according to Maternal age

Mother's age group (in years)	Rural		Urban	
	No. of conception	No. of miscarriage	No. of conception	No. of miscarriage
15 - 19	9	-	-	-
20 - 24	15	1 (0.27%)	8	2 (0.51%)
25 - 29	37	3 (0.82%)	9	-
30 - 34	58	4 (1.09%)	48	3 (0.77%)
35 - 39	55	3 (0.82%)	54	2 (0.51%)
40 +	193	8 (2.17%)	270	16 (4.11%)
All ages	367	19 (5.18%)	389	23 (5.91%)

CHAPTER - VI

BODY BUILD AND FERTILITY

Nutritional intake and health of mother influences fertility to a great extent. ~~Fertility rates in general are influenced positively by improved maternal and negatively by improved child health and nutritional status.~~ It is generally believed that malnutrition produces increased morbidity leading to excessive mortality in infant and young children as a result of which fertility remains high and population growth is excessive. Studies conducted by Gopalan and Naidu, 1972 ; Mahadevan et.al., 1986 ; Sengupta, 1979 ; Bharati and Basu, 1990 ; Rao, 1988 have shown that there is close relation between nutrition, health and fertility as well as childhood mortality. In view of these general relationships, in this section an attempt has been made to investigate the relationship between health, body build and fertility performance of Ahom women. Data on height, weight, and chest circumference were considered to ascertain the body build.

Pignet has suggested the following index (Robusticity index) for evaluation of body build :

$$\text{Pignet index} = \text{Stature in cm.} - \left(\frac{\text{Chest circumference in cm.} + \text{Weight in k.g.}}{2} \right)$$

The index though complex and difficult to interpret ~~has~~ has been used as a ready measure of body build.

Contd..

In rural sample, category III shows higher mean (20.24 ± 0.49 years) for mothers age at the time of first conception than the other categories, while in urban area the mean age of the mothers at the time of first conception is almost akin to each other in all the three categories.

The mean number of conception of ^{the} rural Ahoms shows that the mean values rise from category I (3.25 ± 0.38) to category III (4.42 ± 0.35) through category II (4.07 ± 0.43). In ^{the} urban sample, women belonging to category III of body build had the highest mean conception (4.12 ± 0.40). The value then gradually decreases towards category I (3.68 ± 0.35) through category II (3.90 ± 0.33). Thus, in both the settings, ^{poor} health mothers has relatively higher number of conception.

The mean for the number of live births in ^{the} rural Ahoms shows that category I has low mean (3.06 ± 0.37) while in others i.e. category II and III, it is 3.78 ± 0.41 and 4.16 ± 0.31 respectively. In ^{the} urban Ahoms, the mean for the number of live birth are almost similar irrespective of their body build i.e. 3.47 ± 0.32 , 3.60 ± 0.31 and 3.72 ± 0.29 in category I, II and III respectively.

In urban areas, the women having poor body build (category III) has ^{the} highest incidence of abortion (7.58%)

Contd..

while it is comparatively low in category I (5.0%). Category I also records low incidence (0.71%) of still-birth. One point ^{that must be mentioned,} ~~merely~~ noting here [^] that not a single case of still-birth ~~is~~ ^{has} been reported in category I of rural area. Further, in both the settings, the Ahom women exhibit considerably higher incidence of ^{child mortality} ~~children death~~. However, mortality rate in ^{the} urban area is relatively lower than [^] the rural area. Incidence of mortality is also comparatively higher among offspring of mother having poor body build.

TABLE VI-1

Percentage distribution of Pignet
index in different classes.

Category	Range	Rural Ahoms (N = 88)	Urban Ahoms (N=100)
Very sturdy	Upto 10	9.09	30.00
Sturdy	10 - 15	9.09	8.00
Good	16 - 20	15.91	16.00
Average	21 - 25	14.77	14.00
Weak	26 - 30	23.86	14.00
Very weak	31 - 35	13.64	11.00
Poor	36 or more	13.64	7.00

TABLE VI - 2

Body build and fertility

Demographic parameters	Rural Ahom δ		Urban Ahom δ	
	C A T E G O R Y			
	I	II	I	II
Total number of mothers	16	27	45	38
Age at first conception	19.31 ± 0.47	19.33 ± 0.64	20.24 ± 0.49	21.37 ± 0.57
Mean number of conception	3.25 ± 0.30	4.07 ± 0.43	4.42 ± 0.35	3.68 ± 0.35
Mean number of live births	3.06 ± 0.37	3.78 ± 0.41	4.16 ± 0.31	3.47 ± 0.32
Percentage frequency of live born children	94.23%	92.73%	93.97%	94.29%
Percentage frequency of abortion	5.77%	6.36%	4.53%	5.00%
Percentage frequency of still-births	-	0.91%	1.51%	0.71%
Total reproductive (embryonic) wastage	5.77%	7.27%	6.03%	5.71%
Percentage frequency of pre-reproductive mortality	6.12%	7.84%	9.62%	2.27%
Infant mortality	4.08%	3.92%	4.81%	0.75%
Child mortality	2.04%	0.98%	2.51%	1.52%
Juvenile mortality	-	2.94%	2.14%	-
			8.55%	9.09%
			5.56%	6.72%
			2.78%	4.20%
			1.85%	1.68%
			0.93%	0.84%

CHAPTER - VII

PLACE OF RESIDENCE AND FERTILITY

A study of differential fertility is useful in identifying the factors which determine fertility levels among various sub-groups. It has been observed that the levels and patterns of fertility vary considerably in various sub-groups of the same population. These sub-groups may be based on place of residence, whether urban or rural, social and economic status, in terms of educational attainment, family type, occupation, religion, etc.

In the present chapter, an attempt has been made to compare the Ahom women inhabiting in two contrast settings, that is, rural and urban sample, with regard to certain demographic variables. The comparison is made to detect the affect of spatial or geographical distance, causing micro socio-cultural difference on the rate of fertility.

The present study shows that the mean age at menarche of the rural Ahom women is 12.46 ± 0.18 years and that of the urban Ahom Women is 11.89 ± 0.14 years. Thus, the mean age at menarche of rural Ahom is slightly higher than the urban women, and the value deviate significantly (t value = 2.48) from their urban counterparts in this regard.

Contd..

The mean age at marriage of the rural women is 18.58 ± 0.34 years and that of the urban women is 20.06 ± 0.39 years. Here too, the difference between the two values is statistically significant.

The age of the mothers at the time of first conception shows considerable variation in the two samples. The rural women show much lower mean (19.90 ± 0.36) than the urban women (21.56 ± 0.40 years) and thus stand significantly apart from each other (t value = 3.07).

The mean number of conception of rural women is 4.12 ± 0.23 and that of urban women is 3.89 ± 0.21 . The test of significance (t value = 0.74) exhibit closer affinity between the Ahom sample of two different regions in this regard.

The mean of live births of rural women is 3.87 ± 0.22 and that of urban women is 3.50 ± 0.18 . Here too, the test of significance fails to record (t value = 1.0) any significant differences between the samples.

The present study reveals that among the rural Ahom women the mean age at menopause is 43.70 ± 0.54 years and that of the urban woman is 43.00 ± 0.73 years. The two samples, thus, closely resemble to each other because of non-significant value of t test (t value = 0.77).

Contd..

the coll.

In both ~~the~~ rural and urban Ahom, the average number of abortion and still-births per mother is considerably lower. In rural area, the average number of abortion is 0.213 and still-birth is 0.045 per mother. As a result, the total reproductive (embryonic) wastage works out to be 0.258 per mother. In urban area on the other hand, the average number of abortion is 0.230 and still-birth 0.070 per mother. Thus, the total embryonic reproductive wastage is 0.300 per mother.

It is observed that in ^{one} rural sample, out of 367 conceptions, 344 (93.73%) results in live births. Out of 6.27% of pregnancy wastage, rate of abortion is 5.18% and the remaining portion (1.09%) is due to still-birth. In them 29 children (8.43%) die before they reach reproductive age. Whereas in urban sample, out of 369 conceptions, 359 (92.29%) results in live births, contribution of abortion and still-birth towards total embryonic wastage (7.71%) are 5.91% and 1.80% respectively and 4.74% children of them die within 15 years of life.

In the present study, 4.36% of rural Ahom children die before they cross one year of age. Child mortality is also comparatively high among them (2.03%). While the Ahom mother of urban area exhibit lower incidence of infant mortality (2.51%). The child mortality (1.67%) is also low among them. 8.43% of all live births in rural sample

Contd..

die before they reach adulthood, while in urban sample the incidence of pre-reproductive mortality is comparatively low (4.74%). In both the sample^b, the infant mortality rate is higher than ~~the~~ child or juvenile mortality. Frequency of pre-reproductive mortality as a whole^{is} also high in ^{the} rural sample.

The study also reveals that in both ^{the} rural and urban samples, males are subjected to higher death risk in still-births when compared to those of females. Male juvenile death rate is also comparatively higher than the females. However, bisexual dimorphism with regard to child mortality rate do not show any uniform trend.

SELECTION INTENSITY IN ANOM

Natural selection is one of the major evolutionary forces that acts on population causing gradual modification by bringing about changes in the genetic make up. The degree or rate of changes brought about by selection in population^s can be estimated by applying Crow's index of total selection (1958), since renamed as index of opportunity of selection (Crow, 1966). The index of total selection intensity measures the maximum potential rate of change through selection assuming that variations in mortality and fertility are genetically determined and fitness is completely heritable. If the computed value of the index comes to zero

(which is, of course, highly improbable) for a population, it suggests that there would be no change in the genetic make up of that population through selection (Livingstone and Spuhler, 1965). Subsequently, Johnston and Kensinger (1971) modified Crow's original formula of selection intensity and separated the mortality component "into a component due to variance in prenatal loss and another due to postnatal mortality".

Spuhler (1962, 1963) has suggested that socio-economic factors, particularly economic conditions effect the index of total selection intensity. A few recent studies on Indian population also demonstrate the effect of rural-urban residence, as a major socio-cultural factor on the index.

In the present study, the selection intensity of the rural and urban Ahoms ^{the} has been worked out separately by using both the statistical formulae. These are :

1. Crow's formula (1958) :

$$I = I_m + \frac{I_f}{P_s}$$

$$I_m = \frac{P_d}{P_s} \quad , \quad I_f = \frac{V_f}{(\bar{x})^2}$$

2. Johnston and Kensinger's formula (1971) :

$$I = I_{me} + \frac{I_{mc}}{P_b} + \frac{I_f}{P_b P_s}$$

$$I_{me} = \frac{P_{ed}}{P_b} ; \quad I_{mc} = \frac{P_d}{P_s} ; \quad I_f = \frac{V_f}{(\bar{X})^2}$$

where I = Index of total selection intensity ;

I_m = Index of selection due to infant mortality ;

I_{me} = Index of selection due to embryonic mortality ;

I_{mc} = Index of selection due to child mortality
i.e., mortality before 15 years of age

I_f = Index of selection due to fertility.

$\bar{X}$ = Number of live births per women aged 40 years
and above

V_f = Variance in the number of live births due to
fertility ;

P_{ed} = Proportion of embryonic deaths ;

P_b = Proportion of survivors to birth ;

P_d = Proportion of child death (i.e. died before
15 years of age)

P_s = Proportion of survivors.

These two formulae have been used with a view to identifying how these two estimates of the total selection intensity in the two settings of the Ahom population, differ from each other.

Contd..

For the present analysis of total selection intensity, the mothers aged 40 years and above has been considered. Since most of the earlier workers (Craw, 1958 ; Salzan, 1963 ; Spuhler, 1963 ; Basu, 1967 ; Neel and Chagnan, 1968 ; Ghosh, 1970 ; Johnston and Kensinger, 1971 ; Talukdar, 1977 ; Basu, 1972 ; Mukherjee, 1972) have considered the mothers aged 40 years and above for calculating the total selection intensity. It may be mentioned that some of the later workers (Barua, 1976 ; Murthy and Ramesh, 1978 ; etc.) have taken into accounts of the mothers aged 45 years and above. However, in view of early decline of fertility in the present study, the present investigator has considered mothers aged 40 years and above.

Among the rural Ahom^s, the average number of live-births ($\bar{X}$) per women aged 40 years or more is 5.35 with a variance of 3.46. In the urban Ahom^s, the mean of live-births ($\bar{X}$) and its variance (V_x) are 4.61 and 2.46 respectively.

Among the rural Ahom^s, the mortality (I_m) and fertility (I_f) components, calculated according to Crow's formula, are found to be 0.1166 and 0.1209 respectively, which give the index of total selection intensity (I) as 0.2516. Among the urban Ahom^s, the mortality, fertility and index of total selection intensity are 0.0595, 0.1160 and 0.1824 respectively. The Table VII 3 also set out the indices

Contd..

for the rural and urban Ahom population relating to prenatal mortality (I_{me}), post natal mortality upto 15 years (I_{mc}), fertility (I_f) and the total selection intensity (I) estimated according to Johnston and Kensinger's method. The I_{me} , I_{mc} , I_f and I in the rural Ahom ^{were} ~~also~~ estimated which ^{came out to be} ~~are~~ 0.0503, 0.1166, 0.1209 and 0.3270 respectively, and those for the urban Ahom ~~are~~ 0.0844, 0.0595, 0.1160 and 0.2822 respectively. It is noteworthy that the index of selection due to mortality and more particularly due to pre-reproductive mortality is much higher in the rural sample and it is almost double to that of the urban sample.

Both calculations indicate that the differential fertility contributes more towards the total opportunity for selection. The results also shows that in ~~an~~ rural Ahom post-natal mortality is higher than prenatal mortality, while in urban area, the condition is just ~~the~~ reverse. Thus, it is apparent that there are wide variations between the two Ahom samples.

When ~~these~~ ^{known} two, rural and urban samples are pooled in ~~the~~ Ahom the average number of live births per women is 4.90 and its variance is 2.85. The results shows that differential fertility contributes more than mortality. And the post natal mortality is higher than pre-natal mortality.

Contd..

It is also apparent that the index of total selection intensity according to Johnston and Kensingers method, shows higher value than that of the value calculated following Crow's formula.

TABLE VII-1

Some demographic parameters among
the Ahoms by place of residence.

	Rural Ahoms	Urban Ahoms	Test of Signif. t value
Total number of mothers	89	100	
Age at menarche	12.46 ± 0.18	11.89 ± 0.14	2.48*
Age at marriage	18.58 ± 0.34	20.06 ± 0.39	2.86*
Age at first conception	19.90 ± 0.36	21.56 ± 0.40	3.07*
Mean number of conception	4.12 ± 0.23	3.89 ± 0.21	0.74
Mean number of live births	3.87 ± 0.22	3.59 ± 0.18	1.00
Total number of conception	367	389	
Total number of live born children	344 93.73%	359 92.29%	
Male	49.59%	45.24%	
Female	44.14%	47.04%	
Total number of abortion	19 5.18%	23 5.91%	
Total number of still birth	4 1.09%	7 1.80%	
Male	0.82%	1.29%	
Female	0.27%	0.51%	
Total number of reproductive (embryonic) wastage	23 6.27%	30 7.71%	

Contd..

Total number of infant death%	15	9	
	4.36%	2.51%	
Male	1.45%	1.39%	
Female	2.91%	1.11%	
Total number of Child deaths	7	6	
	2.03%	1.67%	
Male	1.16%	0.56%	
Female	0.87%	1.11%	
Total number of Juvenile death	7	2	
	2.03%	0.56%	
Male	2.03%	0.28%	
Female	-	0.28%	
Total pre-reproductive mortality	8.43%	4.74%	
Average number of still births per mother	0.045	0.070	
Average number of miscarriage/ abortion per mother	0.213	0.230	
Average number of reproductive wastage per mother	0.258	0.300	
Average number of infant death per mother	0.169	0.090	
Average number of children death per mother	0.079	0.060	
Average number of Juvenile death per mother	0.079	0.020	
Age at menopause	43.70**	43.00***	0.77
	± 0.54	± 0.73	

* Indicates statistically significant at 5.0% level of probability.

** Indicates N = 26

*** Indicates N = 41

TABLE VII-2

Parameters used in calculating
total selection intensity in Ahom.

	Rural Ahom/	Urban Ahom/	Ahom Total (R+U)
1. Number of mothers aged 40 ⁺	34	54	88
2. Number of conception	193	270	463
3. Number of live births	182	249	431
4. Number of embryonic death	11	21	32
5. Number of dead child upto 15 years of age	19	14	33
6. Survivors upto 15 yrs. of age and above	163	235	398
7. Number of live births per women of completed fertility (i.e. 40 yrs.)	5.35	4.61	4.90
8. Variance of mean live births	3.46	2.46	2.85

TABLE VII-3

Indices of selection intensity in Abom

Population	Crow's ('58) Formula		Johnston & Kensing's ('71) Method			
	I_m	I_f	I	I_{mc}	I_f	I
Abom (Rural)	0.1166	0.1209	0.2516	0.0603	0.1209	0.3270
Abom (Urban)	0.0595	0.1160	0.1824	0.0044	0.1160	0.2822
Abom (R+U)	0.0830	0.1247	0.2180	0.0742	0.1187	0.3085

CHAPTER - VIII

SUMMARY AND CONCLUSION

The present research project ^{was} designed mainly to study the differential fertility and mortality and to find out the relationship between nutrition and body build of Ahom women in one hand and fertility and mortality on the other. Besides, an attempt has also been made to compare the Ahom population of two contrast settings (i.e. rural and urban) with regard to few demographic variables. Further, some socio-cultural aspects such as age at marriage, education, family types, maternal age has been studied in relation to fertility behaviour of Ahom women.

The study was carried out among the Ahom from two villages - Tiphuk in Sibsagar district and Chiring Gaon in Dibrugarh district.

The survey concerned 189 evermarried women of which 89 were from Tiphuk village (rural) and 100 were from Chiring Gaon (urban). Prepared schedules were used to obtain information on fertility performance ^a and various factors relating to fertility. To study the health of the mothers, anthropometric measurements were collected following standard methods.

The study reveals that among the Ahom, ^{are} fertility and mortality is closely associated with family types. The nuclear

family registered a higher total fertility rate over the joint family, however, in ~~them~~ the reproductive (embryonic) wastage also exhibit a higher rate comparatively. Total pre-reproductive mortality rate demonstrate similar and consistent patterns of distribution in both the samples and higher rate with regard to this variable can be correlated with joint family types.

In the present ^ustudy, it appears that maternal education plays a considerable role in determining the decline of fertility and mortality.

Age at marriage among the Ahoms seem to affect fertility noticeably. It appears that at a late age (20 years and above) as well as those who marry at an early age (below 18 years) exhibit perceptible disadvantage ~~condition~~ with regard to reproductive ~~disadvantage condition with regard to reproductive~~ wastage (both prenatal and post natal) while the figure for those inbetween these two extremes (i.e. those between 18 years to 20 years) indicate the reverse.

The maternal age and its relationship with fertility of Ahom women has also been analysed in this study. It is apparent that with the increase of mother's age the incidence of still-birth and abortion increases in both the rural and urban areas.

Body build of Ahom women following Pignet (c.f. Krogman, 1941) classification indicating ^{es} that the average

physique of women is good. However, the percentage distribution of the subjects of Pignet Index shows considerable variation between the Ahom women of rural and urban area.[§] Majority of the rural Ahom women falls on weak to poor category, while women of urban area ^{are} concentrated ^{the} mainly on sturdy category.

In both the settings, i.e. rural and urban, poor health mothers has relatively higher number of conception and live birth[§]; reproductive (embryonic) wastage also exhibit a higher rate. Incidence of mortality is also comparatively higher among offspring of mother having poor body build. However, mortality rate in urban area is relatively lower than the rural area.

The Ahom women shows considerable variation among them living in two contrast settings, i.e., rural and urban. The mean age at menarche of rural Ahom is slightly higher than the urban women. The mean age at marriage also differs from the rural and urban settings. However, there is no difference in the mean number of conception and live births. The two ^msample closely resemble ~~te~~ each other in case of mean age at menopause too.

In both the rural and ^{the} urban Ahom[§], the average number of abortion and still-births per mother is considerably lower. Frequency of pre-reproductive mortality ^{is} high in ^{the} rural sample. In both the sample[§], the infant mortality is higher than ~~the~~ child or juvenile mortality. The study also reveals that in the

rural and urban samples, males are subjected to higher death risk in still-birth when compared to those of females.

The index of selection due to mortality and more particularly due to pre-reproductive mortality is much higher in the rural sample than ^{the} the urban sample. The present investigation indicates that the differential fertility contributes more towards the total opportunity for selection. Thus, it is apparent that there are wide variations between the two Ahom samples.

Despite the small sample size, the present study reveals a significant aspect to explain the differential fertility and mortality as well as body build of the Ahom women of upper Assam. The study of such variables incorporating large number of individuals may, therefore, help in understanding the population better, and can give firm conclusions about the fertility and mortality pattern of the Ahoms.

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