



Bio-social Factors of Fertility and Mortality: A Study among the Sonowal Kacharis of Assam

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Abstract

Fertility and mortality are the basic parameters of demography. These are different from population to population and society to society depending on different bio-social factors. Understanding these factors in different population groups is very essential, particularly for the country like India, where a numbers of ethnic communities lives in different socio-cultural as well as environmental settings; firstly to know underlying facts that influence on differential fertility and secondly for developing future demographic strategies. In this paper an attempt has been made to evaluate the possible reasons for the differential fertility and mortality among the Sonowal Kacharis of Assam.

The data for the present study was collected from 1230 ever married Sonowal Kachari women from different villages and areas of Dibrugarh district of Assam. The factors like age of women, age at marriage, ABO mating type, educational level of husband and wife, family type, husbands' occupation, family income and residential set up are analyzed in the present study to understand its influence on fertility and mortality in the Sonowal Kacharis of Assam.

Key-words: Bio-social, fertility, mortality, Sonowal Kachari, Dibrugarh district, Assam.

Introduction

Fertility and mortality are the basic parameters of demography. Any change in these parameters can affect the structure of a population. Fertility is a complex process responsible for the biological maintenance of the society, while mortality determines the survival index. Though both fertility and mortality are biological phenomenon are influenced by various biological as well as social factors which results in differential. Different

socio-cultural factors like age at marriage, occupation and income of husband as well as wife, family type and size, educational status of both husband and wife, rural urban set-up of residence, adoption of family planning measures, religion, etc., can play a role in the fertility performance of a population. Conducting a study on socioeconomic characteristics and its effect on age at marriage and on total fertility rate in Nepal, Maitra (2004) reported that an increase in age at marriage significantly reduced total fertility of women; and emphasized that the role of female education in reducing total fertility and increasing age at marriage. In a study done on the women empowerment and its impact on fertility in Bangladesh, Haque et al. (2010) observed that mother's age and age at marriage, besides some other socio-economic factors are the most important factors for determining the fertility rate.

In this paper an attempt has been made to understand the fertility and mortality (0-5yrs) differentials in relation to different bio-social factors like, age of women, age at marriage of women, ABO mating type, education and occupation of women and their husbands, household annual income and family type among the Sonowal Kacharis of Assam.

The Sonowal Kachari is one of the most well known plain tribes of Upper Assam; it is the third largest population among the schedule tribes of Assam. The Sonowal Kachari belongs to the Mongoloid racial group (Das, 2007). They inhabit mainly the villages far from the towns and generally near the rivers which help in their agricultural works. Cultivating paddy and growing vegetables and animal husbandry are their major sources of livelihood.

Materials and Methods

The data for the present study were collected from 1230 ever married Sonowal Kachari couples who have at least one live birth. Data on reproductive history were collected by interviewing the couples (1230) with a specially designed fertility enumeration schedule which include the age of women, age at marriage of women, occupation of husband and wife, family type and family size, education of husband and wife, number of live birth, number of fertility wastage, number of postnatal mortality etc.. For collecting data on ABO blood groups of husbands and wives group determination have been done through the open slide method during the time of field

work. Data for the present study have been collected from different villages and some areas nearby the Dibrugarh town of Dibrugarh district, Assam, during the years 2009 to 2011. The required statistical analyses have been utilized for presentation of the data. For analysing mortality, the data have been classified in to **Neonatal** (≤ 28 days), **Infant** (29 days to 1year) and **Child** (1 year and 1 day to 14 years).

Result and Discussion

The frequency distribution of fertility performance of 1230 ever married women of the Dibrugarh district is shown in the **Table1**. The table shows that the total number of pregnancy shown by the women is 3131 but number of live birth is 2917; thus the number of live birth per woman is found to be 2.37. Table shows that the frequency of prenatal mortality and postnatal mortality (0-14years) is 6.83% and 5.83% respectively. Out of 5.83% of postnatal mortality, heights number of mortality found in the neonatal stage, the percentage of it is 3.22; the percentage of infant and child mortalities are 1.10 and 1.47 respectively. The ratio of living children shown by the population is 94.17 in per 100 live births.

Table1: Distribution of fertility performance

Fertility performance	No.	%
Total number of women	1230	-
Total number of pregnancy	3131	-
Total number of wastage(Prenatal mortality)	214	6.83
(a) Spontaneous Abortion	178	5.69
(b) Still birth	36	1.15
Total number of live birth	2917	93.17
Live birth per woman	2.37	-
Total number of death(Post natal mortality)	170	5.83
(a) Neo-natal death (0-28 days)	95	3.22
(b) Infant death (29 days-1year)	32	1.10
(c) Child death (1.1year-5years)	43	1.47
Surviving children	2747	94.17

Table2: Distribution of fertility and mortality in relation to age of women

Age of women (in years)	No. of women	No. of live birth	Mortality							
			Neonate	%	Infant	%	Child	%	Total	%
<25	19	135	5	3.70	2	1.48	1	0.74	8	5.93
26-35	391	644	9	1.40	7	1.09	2	0.31	18	2.80
36-45	377	915	27	2.95	7	0.78	9	0.98	43	4.70
46-55	245	766	28	3.67	6	0.73	12	1.57	46	6.01
56-65	108	457	26	5.69	10	2.19	19	4.16	55	12.04
Total	1230	2917	95	3.26	32	1.10	43	1.47	170	5.83

Distribution of fertility and mortality in relation to the age of women is shown in the **Table2**. The highest percentage of mortality (12.04%) is shown among the women of age group 56-65 years; it is higher than the twice of the total mortality rate in the population. The lowest frequency (2.80%) is shown by the women of age group 26-35 years; out of the total live birth 644 in this group shows only 18 total mortality. Among all the types of mortalities, height frequency of mortality is found to be neonatal mortality shown by the women of age group 56-65 age.

Distribution of fertility and mortality in relation to age at marriage of women is shown in the **Table3**. In the table it is found that the women who have married in ≤ 19 years of their age experiences higher frequencies of mortality with 7.25%; which is higher than that of the percentage of mortality shown by the population as a whole. They show higher frequencies of mortality in each stage, that is neonatal (4.03%), infant (1.16%) and child (2.06%) than that of the women married in later ages. Thus they show that the higher frequency of mortality is associated with the lower age at marriage of women in the studied population.

Table3: Distribution of fertility and mortality in relation to age at marriage of women

Age group (in years)	No. of women	No. of live birth	Mortality per 100 live birth							
			Neonate	%	Infant	%	Child	%	Total	%
≤ 19	379	1118	45	4.03	13	1.16	23	2.06	81	7.25
20-25	537	1330	38	2.86	10	0.75	18	1.35	66	4.96
≥ 26	314	469	12	2.56	9	1.92	2	0.43	23	4.90
Total	1230	2917	95	3.26	32	1.10	43	1.47	170	5.83

Table4: Distribution of fertility and mortality in relation to ABO mating type

Mating type	No. of couple	Live birth	Mortality							
			Neonate	%	Infant	%	Child	%	Total	%
Compatible	763	1850	35	1.89	10	0.54	18	0.97	63	3.41
Incompatible	467	1067	60	5.62	22	2.06	25	2.34	107	10.08
Total	1230	2917	95	3.26	32	1.10	43	1.47	170	5.83

Distribution of fertility and mortality in relation to ABO mating type is shown in the **Table 4**. Out of the total 1230 couples 763 couples are compatible and 467 are incompatible. The table shows that the frequencies of mortality in every stage are found to be higher among the incompatible couples than that are found among the compatible couples. Out of the total 1850 live birth of the compatible couples, they show 3.41% of mortality, whereas among the incompatible couples, they show 10.08% of mortality out of 1067 live births. They show heights 5.62% of neonatal mortality.

Table5: Distribution of fertility and mortality in relation to women education

Level of education	No. of women	Live birth	Mortality							
			Neonate	%	Infant	%	Child	%	Total	%
Illiterate	70	297	18	6.06	9	3.03	14	4.71	41	13.80
Primary	158	571	25	4.37	8	1.40	12	2.10	45	7.88
Secondary	425	995	29	2.91	9	0.90	15	1.50	53	5.33
Hr. Sec. and above	577	1054	23	2.31	6	0.60	2	0.20	31	3.11
Total	1230	2917	95	9.54	32	3.23	43	4.32	170	5.83

Distribution of fertility and mortality in relation to women's education is shown in the **Table5**. From the table it is found that out of total 1230 women, 70 are illiterate and they show 297 live births. Maximum 577 numbers of women in the population show higher secondary and above level of education and they have total 1054 live births. Among all the women of the population, the illiterate women experiences heights frequency of mortality with 13.80%; it is followed by the women having primary education; they show 7.88% of mortality. The table shows that the frequency of mortality is decreases with the increase of the level of education of women in the population.

Distribution of fertility and mortality in relation to husbands' education is shown in the **Table 6**. The table shows that the frequencies of mortality are higher (14.49%) among the women whose husbands are illiterate, whereas it is lowest (4.77%) among the women whose husbands' have higher secondary and above education. The rates of mortality in each stage are higher among the women whose husbands are illiterate and it tends to be decrease with the increase of level of husbands' education.

Table6: Distribution of fertility and mortality in relation to husbands' education

Level of education	No. of husband	Live birth	Mortality							
			Neonate	%	Infant	%	Child	%	Total	%
Illiterate	17	69	6	8.69	2	2.89	2	2.89	10	14.49
Primary	102	396	20	5.05	6	1.52	7	1.76	33	8.33
Secondary	363	986	30	3.04	11	1.12	16	1.62	57	5.78
Hr. Sec. and above	748	1466	39	2.66	13	0.89	18	1.23	70	4.77
Total	1230	2917	95	3.26	32	1.10	43	1.47	170	5.83

Table7: Distribution of fertility and mortality in relation to husbands' occupation

Occupation	No. of husband	Live birth	Mortality							
			Neonate	%	Infant	%	Child	%	Total	%
Cultivator	571	1298	52	4.01	22	1.69	29	2.23	103	7.94
Service	468	1287	31	2.41	5	0.39	11	0.85	47	3.65
Business	107	168	7	4.61	1	0.60	2	1.19	10	5.95
Others	84	164	5	3.05	4	2.44	1	0.61	10	6.10
Total	1230	2917	95	3.26	32	1.10	43	1.47	170	5.83

The **Table7** shows the distribution of fertility and mortality in relation to husbands' occupation. From the table it is seen that the frequency of mortality is found to be higher (7.94%) among the women whose husbands are cultivator and is lowest (3.65%) among the women whose husbands are service holder. The rate infant and child mortalities are also very less among the women of the later group. Out of all stages of mortality, the rate of neonatal mortality is found to be higher among the women whose husbands are business man; they show 4.61% neonatal mortality.

Table8: Distribution of fertility and mortality in relation to annual income

Annual income	No. of couple	Live birth	Mortality							
			Neonate	%	Infant	%	Child	%	Total	%
≤20,000	508	1567	67	4.28	19	1.21	30	1.91	116	7.40
20,001-30,000	427	827	18	2.18	10	1.21	8	0.97	36	4.35
≥30,001	250	523	10	1.91	3	0.57	5	0.96	18	3.44
Total	1230	2917	95	3.26	32	1.10	43	1.47	170	5.83

Distribution of fertility and mortality in relation to annual income is shown in the **Table8**. The frequencies of mortality in each stage that is neonatal, infant and child mortalities are found to be higher (7.40%) among the couples of lower income group (≤20,000), and are decreases with the increase of annual income; it is found to be lowest (3.44%) among the couples whose annual income is more than ≥30,001Rs.

Table9: Distribution of fertility and mortality in relation to family type

Family type	No. of couple	Live birth	Mortality							
			Neonate	%	Infant	%	Child	%	Total	%
Nuclear family	687	1643	69	4.20	17	1.03	23	1.4	109	6.63
Joint family	543	1274	26	2.04	15	1.18	20	1.57	61	4.79
Total	1230	2917	95	3.26	32	1.10	43	1.47	170	5.83

The **Table9** shows the distribution of fertility and mortality in relation to family type. Out of 1230 couples, 687 are live in nuclear family and 543 are live in joint families. The table reveals that the rate of neonatal mortality is higher than any other types of mortality in the population; the frequency of it is 4.20%. Among the couples of joint family shows 2.04% of neonatal mortality.

Table10: Distribution of fertility and mortality in relation to residential setup

Family type	No. of couple	Live birth	Mortality							
			Neonate	%	Infant	%	Child	%	Total	%
Rural	630	1584	57	3.60	20	1.26	25	1.58	102	6.44
Urban	600	1333	38	2.85	12	0.90	18	1.35	68	5.10
Total	1230	2917	95	3.26	32	1.10	43	1.47	170	5.83

The **Table10** shows the distribution of fertility and mortality in relation to residential setup. Out of 1230 couples, 630 are live in rural areas and 600 are live in urban areas. From the table it is found that the couples living in rural areas experiences higher rate of mortality than that of the couples living urban areas; the frequencies are 6.44% and 5.10% respectively.

Table 11: Regression analyses for live birth

Parameters	B	T	Sig.
Age at marriage	-0.832	2.97	0.04*
Residential setup	0.472	3.40	0.041*
Education of women	-0.592	3.77	0.32*
Education of husbands	0.89	1.03	0.41
Occupation of husbands	1.11	1.30	0.33
Household income	-0.29	3.28	0.022*
Family type	0.58	1.22	0.21*

(* Indicates significant at 5% level)

The regression analysis on the effect of the biological and socio-cultural factors on the number of live births is shown in the **Table11**. The coefficient of regression (β) on the effect of residential setup and family type (independent variables) on the number of live births (dependent variable) is positively significant ($\beta= 0.472$, $t=3.40$, $p< 0.05$; $\beta= 0.58$, $t=1.22$, $p<0.05$). However, the age at marriage, educational level of women and household income measures shows negative significant effect on the number of live births ($\beta= -0.832$, $t=2.97$, $p<0.05$; $\beta=-0.592$, $t=3.77$, $p<0.05$ and $\beta= -0.29$, $t=3.28$, $p<0.05$ respectively). Thus the table indicates that with the

increase in age at marriage, educational level of women and household income, the number of live births decreases. From the table it is also observed that the education and occupation of husbands have positive effect on live birth but are statistically insignificant.

Table 12: Regression analyses for mortality

Parameters	B	T	Sig.
Age at marriage	0.78	2.97	0.032*
Residential setup	0.83	3.07	0.035*
Education of women	-0.493	3.11	0.022*
Education of husbands	0.47	1.30	0.28
Occupation of husbands	0.92	1.03	0.32
Household income	-0.49	2.87	0.044*
Family type	0.56	2.96	0.046*

(* Indicates significant at 5% level)

The regression analysis for mortality is shown in the **Table12**. The table reveals that education of women and household income have negative effect on mortality ($\beta=-0.493, t=3.11, p<0.05$ and $\beta=-0.49, t=2.87, p<0.05$), while age at marriage, residential set up and family type show positive effect on the same ($\beta=0.78, t=2.97, p<0.05$; $\beta=0.83, t=3.07, p<0.05$ and $\beta=0.56, t=2.96, p<0.05$). All of these show statistically significant effect, whereas education and occupation of husbands show no significant effect on postnatal mortality.

Conclusion

The studied population Sonowal Kachari with moderately high fertility and mortality shows a picture of an expanding population. The frequency of mortality found to be higher among the older mothers in comparison to the younger. The early age at marriage of women and ABO incompatibility show an association with higher mortality. Increase of educational attainment of both women and their husbands' results in gradual decrease of fertility and mortality. Women whose husbands' are cultivator and of low income group experiences higher mortalities in comparison to others. Almost all the women of the population associated with paddy cultivation; it may be reason for high mortality among the cultivator group. Again, from the study it is found that the frequency of mortality is higher among the women of nuclear family than that is found among the women of joint family in the studied population. The frequencies of mortality among the women of villages are higher than that of their counterpart living in the towns.

Regression analysis on the effect of the various factors on the number of live births and mortality show that the age at marriage show a negative effect on live birth, but it shows a positive effect on mortality indicating the association of lower fertility but higher mortality with higher age at marriage of women among the population.

The factors like education of women and household income show significant difference in the number of live births and frequency of mortality. Both of these factors considered in the present study show a statistically negative significant influence on the fertility and mortality indicating lower fertility and mortality with the increase of women's education and household income.

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