



A comparative study of socio-economic effect and biological variables on birth weight among the Assamese Hindus and Assamese Muslims people in Guwahati city.

Tiluttoma Baruah and Christene Bora

Department of Anthropology, Cotton College, Guwahati, India

Abstract

Birth weight is the body weight of a baby at its birth (Wikipedia). A study on a few selected socio-biological and demographic determinants of birth weight was conducted at three different hospitals of Guwahati city, namely, 'Pratikha hospital', 'Global hospital' and 'H.M. hospital and research centre pvt. Ltd.' of Guwahati, Assam during January 2013 to June 2014. The sample size consists of 238 Hindu women (243 live births) and 171 (173 live births) of Muslim women. The findings of the present study conclude that teenage pregnancies should be actively discouraged in both the ethnic group so as to reduce the incidence of LBW. The concerned authorities should formulate appropriate health awareness and health promotion programmes to encourage late (non teenage) motherhood and discourage early pregnancies among individuals.

Keywords: birth weight, low birth weight, parity

1. Introduction

Birth weight has been described as the single most useful health indicator in perinatal medicine and epidemiology; indicating both the pregnancy experience and the risk of morbidity and mortality (Cogswell *et al.*, 1995), and a sensitive indicator of changes in living conditions (Silva *et al.*, 2004; and Vagero *et al.*, 1999). It is a very important and potent indicator for both mortality and morbidity of the neonate. The birth weight of a newborn depends on the maternal nutritional status both before and during pregnancy. Ramachandran (2000) in his review described maternal nutrition as the most important determinant of LBW in developing countries. It is quite common that in poverty as well as by the gender bias in food distribution within the family. In fact, a child's future health begins with the mother's nutritional status in pregnancy. Low birth weight occurs because of poor maternal health and nutrition, and poor foetal growth. A mother, chronically undernourished from youth, will likely give birth to an underweight baby, perpetuating the intergenerational cycle. Birth weight of the

newborn is believed to be influenced by a number of factors. The maternal age and parity have a significant effect on birth weight, as shown by Dhall and Bagga (1995). Along with maternal age and parity, number of antenatal visits has independent effects on birth weight even when the effects of gestational age and sex of infant were eliminated (Xu *et al.*, 1995). Better antenatal care with special attention to primis and elderly women (≥ 35) also reduces the incidence of low birth weight babies (Nair *et al.*, 2000). Biological factors like sex and parity of the baby also show differential impact on birth weight (Defo and Partin 1993). The causes of low birth weight are therefore multifactorial involving genetic, placental, foetal and maternal factors (Malik *et al.*, 1997; Kamaladoss, Abel and Sampathkumar, 1992). The relationship between the maternal age, parity and birth weight has been studied from the remote past by many workers in India and abroad.

Low Birth Weight (LBW), birth weight less than 2500 gm (WHO, 1984) and perinatal mortality are important public health problems in developing

countries (Tafari, 1981; Edouard, 1985) particularly in the Indian subcontinent, where the LBW rates are 30-50%, which are among the highest in the world (UNICEF-ICMR, 1987). The national neonatal perinatal database reported that nearly about one third of all neonates born in major hospitals of India every year are LBW. Of all the neonatal deaths, nearly 82% occur among LBW (NNF,1995), which is the highest in the world. The causes of LBW are multifactorial (Kamala-doss *et al.*, 1992): it is associated with sex of baby (Oni, 1986; Kramar, 1987; Pakrasi *et al.*, 1985), maternal hemoglobin level during pregnancy, hard manual labour (Ghosh *et al.*, 1977), maternal nutrition (Fredrick and Adelstein, 1978), economic condition (Pakrasi, 1985; Dhall and Bagga 1995), maternal height, antenatal care (Kamaladoss *et al.*, 1992, Rehan, 1982), parents education (Makhija and Murthy, 1990), maternal weight (Mavalankar *et al.*, 1994), tobacco consumption (Verma, 1983), place of residence (Makhija and Murthy 1989), season of the year, ethnicity (Bantji, 1983), and most importantly mother's age and parity (Cramer, 1995).

2. Methodology

The present data have been collected from the Pratikha hospital', 'Global hospital' and 'H.M. hospital and research centre pvt. Ltd.' of Guwahati, Assam during January 2013 to June 2014. The sample size consists of 238 Hindu women (243 live births) and 171 (173 live births) of Muslim women, excluding tribal and other caste women. The data relate to the mother's age, birth-weight of the child in grams, parity, sex and the income of the family. There are two religious groups in the study area, namely Assamese

Hindus and Assamese Muslims. The Hindus, in turn, consist of different diverse groups, and is further subdivided into General Castes (GC), Scheduled Castes (SC) and Other Backward Classes (OBC). The mother's educational status is grouped into several categories: non-literate, 8th pass, diploma holders, HSSLC, H.S., Graduate, Post-graduate and Doctorate. The occupational groups are categorized under four groups, such as 'housewives'; 'service group', which covers those who are engaged either in public or private sector i.e., salaried persons or professionals like doctors, banker, nurse, teachers, advocates etc; secondly, 'majdoor group', which covers maid and daily labourers etc and lastly, 'business group' which consists of business person, builder, beautician etc. The biological data collected include age and weight of mother at the time of delivery, parity, birth height and weight, Hb% and sex of the newborn. Birth weights of newborns were measured without clothes within 15-30minutes (in grams) after delivery. For the purpose of collection of information on demography one schedule was specially designed. The schedule includes name, religion, present age, nature of occupation (both mothers and their husbands), education (mothers and their husbands), and economic condition. The monthly income of both the population are classified into five groups, ranges from <15,000; 15,000-30,000; 31,000-55,000; 56,000-80,000 and >81,000.

3. Results

The results include the findings derived by analyzing the data collected during an investigation conducted taking into account of the samples already drawn.

Table-1 : Overall and sex-specific characteristics of the mothers and newborns

	Hindus		Muslims	
	Mean \pm S.E.	S.D.	Mean \pm S.E.	S.D.
Birth length (in cm)	46.40 \pm 0.15	2.466	46.59 \pm 0.15	1.976
Birth weight (in grams)	2.86 \pm 0.50	0.509	2.91 \pm 0.04	0.575
Maternal height (in cm)	160.04 \pm 0.37	5.734	162.12 \pm 0.41	5.447
Maternal weight (in kg)	70.08 \pm 0.35	5.550	70.22 \pm 0.42	5.548

Table-1 shows the overall sex-specific characteristics of the mothers and of the newborns. It seems that the overall mean birth weight, birth

length, maternal height and maternal weight of Muslim population is higher than that of Hindu populations.

Table-2 : Mean, S.E. and S.D. of socio-biological variables with the birth-weight of the newborn

		Hindu mothers		Muslim mothers	
		Mean ± S.E.	S.D.	Mean ± S.E.	S.D.
Parity	1	2.853±0.03	0.510	2.927±0.04	0.575
	2	2.862±0.03	0.504	2.931±0.04	0.579
	3	2.863±0.03	0.505	2.940±0.04	0.581
	4	-	-	3.027±0.04	0.566
Hb%	Low	2.862±0.03	0.503	2.929±0.04	0.575
	Normal	2.853±0.03	0.510	2.931±0.04	0.577
Social class	General	2.858±0.03	0.509	-	-
	OBC	2.853±0.03	0.506	-	-
	SC	2.856±0.03	0.509	-	-
Monthly income (in Rs)	<15,000	-	-	2.936±0.05	0.592
	15,000-30,000	2.856±0.03	0.506	2.925±0.04	0.587
	31,000-55,000	2.858±0.03	0.510	2.927±0.04	0.577
	56,000-80,000	2.863±0.03	0.504	2.930±0.04	0.575
	81,000 and above	2.854±0.03	0.510	2.926±0.05	0.599
Educational status (Mothers)	Illiterate	-	-	2.984±0.05	0.592
	8th pass	-	-	2.928±0.05	0.597
	Diploma	-	-	-	-
	HSSLC	2.800±0.04	0.549	2.927±0.05	0.616
	H.S.	2.844±0.03	0.513	2.928±0.04	0.586
	Graduate	2.858±0.03	0.511	2.930±0.04	0.575
	Post-graduate	2.856±0.03	0.510	2.922±0.04	0.583
	Doctorate	2.819±0.03	0.512	2.852±0.05	0.637
Educational status (Fathers)	Illiterate	-	-	2.984±0.05	0.592
	8th pass	-	-	2.923±0.05	0.614
	Diploma	2.776±0.04	0.545	-	-
	HSSLC	-	-	2.976±0.05	0.598
	H.S.	2.826±0.03	0.508	2.928±0.04	0.580
	Graduate	2.857±0.03	0.509	2.931±0.04	0.578
	Post-graduate	2.853±0.03	0.510	2.924±0.04	0.583
	Doctorate	2.830±0.03	0.511	2.948±0.05	0.621

Gestational period	Preterm	2.849±0.03	0.511	2.919±0.05	0.596
	Term	2.858±0.03	0.509	2.929±0.04	0.575

Ante-natal check up	Regular	2.858±0.03	0.509	2.930±0.04	0.587
	At times	2.856±0.03	0.505	2.937±0.04	0.575

Occupational status (Mothers)	Housewife	2.858±0.03	0.509	2.930±0.04	0.575
	Service	2.858±0.03	0.507	2.916±0.04	0.586
	Business	2.851±0.03	0.506	2.850±0.05	0.612
	Majdoor	-	-	2.983±0.04	0.584

Occupational status (Fathers)	Service	2.858±0.03	0.509	2.931±0.04	0.578
	Business	2.858±0.03	0.505	2.931±0.04	0.577
	Majdoor	-	-	2.984±0.05	0.592

Age group	<20	2.700±0.04	0.711	2.932±0.05	0.598
	20 – 24	2.842±0.03	0.509	2.928±0.04	0.576
	25 – 29	2.851±0.03	0.510	2.927±0.04	0.577
	30 – 34	2.862±0.03	0.504	2.929±0.04	0.581
	35 +	2.853±0.03	0.510	2.932±0.04	0.581

Table-2, shows that the average birth weight tends to increase with parity. In 1966, it has been found that the birth weight increases with the maternal age, and that parity and birth order have an important effect on it (Bardham, A). In case of Hindu population, the birth weight does not increase or decrease with normal level or low level of haemoglobin but in Muslim population the birth weight is higher in normal level of haemoglobin other than the that low Hb%. The mean birth weight does not relate with the social class of the Hindu population. The birth weight of the both the population increases with the increase in the

monthly income, except negligible case of Muslim population where the monthly income is less than 15,000, may be due to parity. Similarly, in the case of educational qualification of mothers of the both populations, as educational qualification increases so as the birth weight. The mean birth weight is higher of term deliveries rather than preterm deliveries among both the populations. Similarly, housewives have the higher mean birth weight than that of women those who are busy professionally. Same in the case of age group, as age increases of mothers so as the mean birth weight also increases.

Table-3: Chi-square test between the ages of the mother and gestational weeks of the both Assamese Hindu and Muslim mothers

	X²-value	Remarks
Gestational weeks	0.442	Not significant
Parity	18.409	Significant (p>0.0005)
Age	14.388	Significant (p<0.005)
Occupational status	20.946	Significant (p>0.0005)
Educational status	52.471	Significant (p>0.0005)
Monthly income	20.421	Significant (p>0.0005)

Table-3 shows that there is no significant difference between the gestational ages of both Hindu and Muslim mothers. While other than that parameter, other parameters such as age, occupational status, educational status and monthly income have significant difference among both the populations.

Table-4: t- test between the means of birth weight and socio-economic variables of the both Assamese Hindu and Muslim mothers

Parameters	t-value	Remarks
Ages	3.191	Significant
Birth length	0.909	Not significant
Birth weight	0.099	Not significant
Maternal height	3.768	Significant
Maternal weight	0.256	Not significant

Table-4 shows that there is no significant difference among the means of birth length, birth weight, and maternal weight of both the populations. And on the other side, there is a significant difference between the means of ages and maternal height of the mothers of the two populations.

4. Conclusion

It can be concluded that parity of mother and gestational age of the baby is usually associated with birth weight. Prevalence of low birth weight is high in preterm baby than its counterparts. This finding also corresponds to findings of Khanam, 1996; and Banik *et. al.*, 1967. Mother's literacy of secondary school to onwards has beneficial effect on birth weight probably due to their healthy lifestyle in comparison to no

illiteracy or literacy of primary level. Again, higher incidence of low birth weight in employed mother than housewife may be due to less facility of taking rest during pregnancy or other confounding factors. It also can be concluded that the average birth weight tends to increase with parity, but the relationship between birth weight and maternal age is weaker than that of the former one. It is also seen statistically that there is no significant difference among the means of birth length, birth weight, and maternal weight of both the populations. And on the other side, there is a significant difference between the means of ages and maternal height of the mothers of the two populations. And, there is no significant difference between the gestational ages of both Hindu and Muslim mothers. While other than that parameter, other parameters such

as age, occupational status, educational status and monthly income have significant difference among both the populations. On the whole, the results obtained give a tie between maternal age, parity and the mean birth weight. Though these data are too few for this sort of study, there is an indication that the influence of parity and mother's age affects the birth weight of the offspring.

The findings of the present study also conclude that teenage pregnancies should be actively discouraged in both the ethnic group so as to reduce the incidence of LBW. The concerned authorities should formulate appropriate health awareness and health promotion programmes to encourage late (non teenage) motherhood and discourage early pregnancies among individuals. In any society where child bearing

defines a woman's identity and motherhood of great social significance, infertility leaves unhealed scars traumatizing the women socially and emotionally. Maintaining a healthy lifestyle, getting regular checkups with the doctor and maintenance of normal body weight can avoid fertility problems. Identifying and controlling chronic diseases such as diabetes, hyperthyroidism and hypothyroidism increases fertility prospects. The need for health care should relate to the cultural realities of specific locations; where infertility is a pervasive and serious concern it should be addressed through health care programs. The present study enlightens the views of Muslim as well as of the Hindu women that the reproductive performance should be maintained for a healthy society.

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