

## Maternal age, Parity and Birth Weight in Manipur

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Citation: Ngaithianven E and Pathak RK. 2015. Maternal age, Parity and Birth Weight in Manipur. Human Biology Review, 4 (4), 347-354.

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### ABSTRACT:

**Background:** Birth weight is the most important and reliable indicator for infant growth and survival. A baby's weight at birth is strongly associated with mortality risk during the first year and, to a lesser degree, with developmental problems in childhood and the risk of various diseases in adulthood.

**Objectives:** To see the influence of maternal age and parity on infant birth weight.

### Materials and methods:

**Study design:** cross sectional, hospital based study.

**Study setting:** Hospitals and Maternity Clinic in Churachandpur, Manipur.

**Study period:** 3 months (November, 2010- February, 2011)

**Study population:** 219 Paite (Manipur, India) pregnant women delivering live infants in the study setting during the period of study.

**Results:** The mean maternal age in the present sample population is 26 years. The mean birth weight of boys is 3.24kg, while for the girls it is 3.14kg. To assess the influence of maternal age and parity on mean birth weight, Chi-square test was applied between low birth weight (less than 2500g) and birth weight greater than 2500g babies. However, no significant influences of maternal age and parity are observed on mean birth weight.

**Key words:** birth weight, maternal age, parity.

## **INTRODUCTION**

Birth weight is one of the most accessible and extremely powerful predictor of an individual baby's survival. A baby's weight at birth is strongly associated with mortality risk during the first year and, to a lesser degree, with developmental problems in childhood and the risk of various diseases in adulthood. The lower the birth weight, the higher a baby's risk of infant mortality (Wilcox *et al.*, 1983). Although various definitions of low birth weight exist, the World Health Organization (1992) definition of less than 2500g is the one most commonly used, with normal birth weight as 2500-4000g and a macrosoma as a birth weight > 4000g.

It is observed from previous studies that advancing maternal age and increased parity from 1 onwards had a significant influence on birth weight (MacLeod and Kiely, 1988; Som *et al.*, 2004; Elshibly and Schmalisch 2008; Padda *et al.*, 2011; Tabrizi and Sarawathi 2012; Dhankar *et al.*, 2013 and Amosu 2014). However, contrary result was observed in a study conducted in Tanzania (Adamson 2007). Shami and Khan (1980) in their study conducted in Lahore, Pakistan, found that there is no statistically significant relation between maternal age and birth weight; but parity had significant influence on the male birth weight, while it was nonsignificant in case of female birth weight. Babies having macrosoma birth weight showed negative bearing with maternal age and parity in United Kingdom population (Reilly *et al.*, 2005; Hawkins *et al.*, 2009). Wilcox *et al.* (1996) in their study in Scandinavia observed no significant influence of parity with birth weight. Joshi *et al.* (2013) in their study among the newborn of gas affected area of Bhopal reported that maternal age and parity were not significantly associated with birth weight of the babies. However, a recent study by Suryawanshi and Kaveri (2015) in Odhisa observed that maternal age and parity are significantly associated with low birth weight of the babies.

Thus, keeping in view the above diverse findings, an attempt is made in the present article to find if there is any influence/bearing of maternal age and parity on birth weight among the 'Paite' tribe of Manipur.

## **MATERIAL AND METHODS**

This study has been conducted in Churachandpur town, Manipur, India, among one of the indigenous tribe called 'Paite', who practice Christianity. For collection of data, we approached 1 government hospital, 1 mission aided hospital, 2 private hospitals and a private clinic in Churachandpur for a period of three months (November, 2010- February, 2011). Mothers who

delivered after completing 37 to 42 weeks of pregnancy were included in the study, and the birth weight of their babies was recorded. The sample comprises 219 mother- infant pairs. After explaining the purpose of the study, permission was obtained from Hospital and clinic administration and written consent was obtained from the mothers before proceeding with the work.

Interviewing the mother and recording of the newborns' birth weight were the main methodologies adopted for the present study. The data were collected by interviewing the mother in the hospital before she delivered her baby and the babies were measured within 24 hours of birth. Infant weighing machine was used and birth weight recorded in grams up to the accuracy of 20 grams.

The data were compiled using Microsoft Excel and SPSS (16.0) and subsequently analyzed for descriptive statistics such as mean, standard deviation, coefficient of variation and Chi-square test.

## **RESULTS**

Table 1 shows the mean, standard deviation, co-efficient of variation and observed range of birth weight for both boys and girls and also for combined sexes. It is clear from Table 1 that within sample variation for both boys and girls is similar. Further, the mean birth weight of boys (3.24kg) is slightly more than girls (3.14kg), however, this difference is statistically nonsignificant ( $t= 0.157$ ).

**Table 1:** Mean birth weight of boys and girls

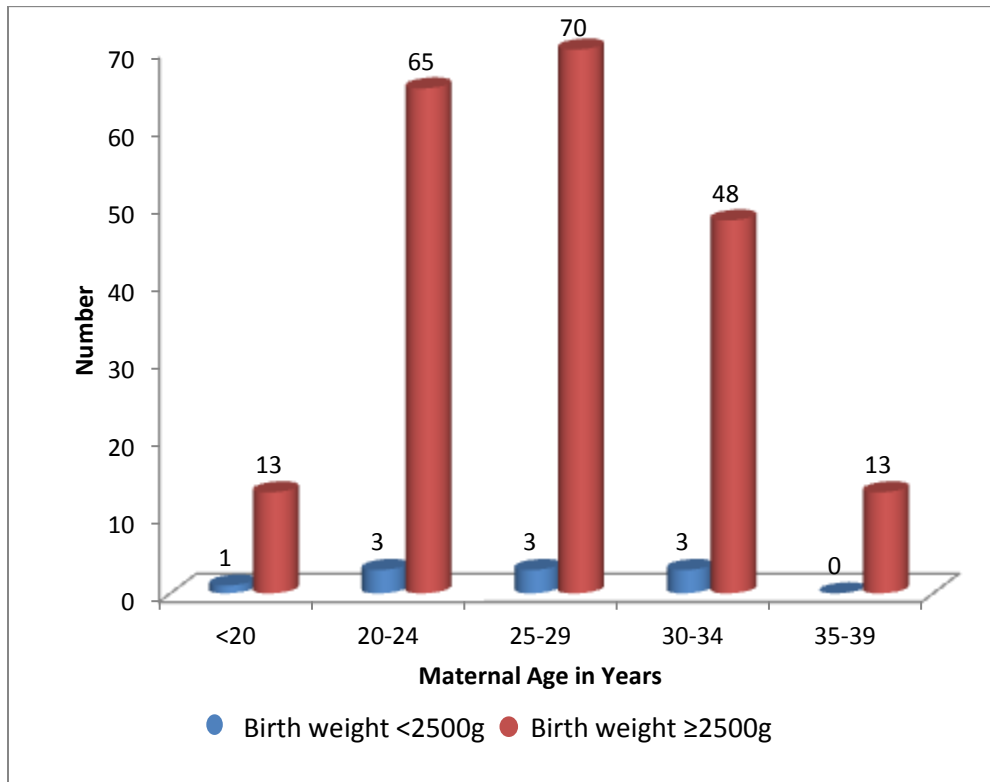
Sex of the new born	Mean birth weight (kg)	Standard Deviation	Co-efficient of Variation	Minimum	Maximum	t- value (p)
Boys	3.24	0.45	14.05	2.20	4.50	0.157 (0.55)
Girls	3.14	0.45	14.32	2.00	4.50	
Total	3.19	0.45	14.10	2.00	4.50	

Since mean birth weight did not show statistically significant difference between boys and girls, the data for two sexes were pooled for further analysis. Table 2 depicts the number and percentage of low birth weight babies and those above 2500g birth weight according to maternal age. This data is also graphically presented in Figure 1. It is observed that maximum number of babies who have birth weight  $\geq 2500$  g are born to mothers of age group 25-29 yrs (31.96%)

followed by 20-24 yrs (29.68%), 30-34 yrs (21.91%), whereas, only 5.93% babies are born to mothers in each age group of <20 and 35-38 yrs. In this study sample, only 4.56 % newborn were found in low birth weight category. Chi-square values do not show significant influence of maternal age on mean birth weight of the babies.

**Table 2:** The distribution of newborns according to birth weight and maternal age group

Maternal age (in years)	Mean Birth weight (in g)		$\chi^2$ value (p)
	<2500g	$\geq$ 2500 g	
	N (%)	N (%)	
<20	1 (0.45)	13 (5.93)	1.076 (0.897)
20-24	3 (1.37)	65 (29.68)	
25-29	3 (1.37)	70 (31.96)	
30-34	3 (1.37)	48 (21.91)	
35-38	0 (0)	13 (5.93)	
Total	10 (4.56)	209 (95.43)	



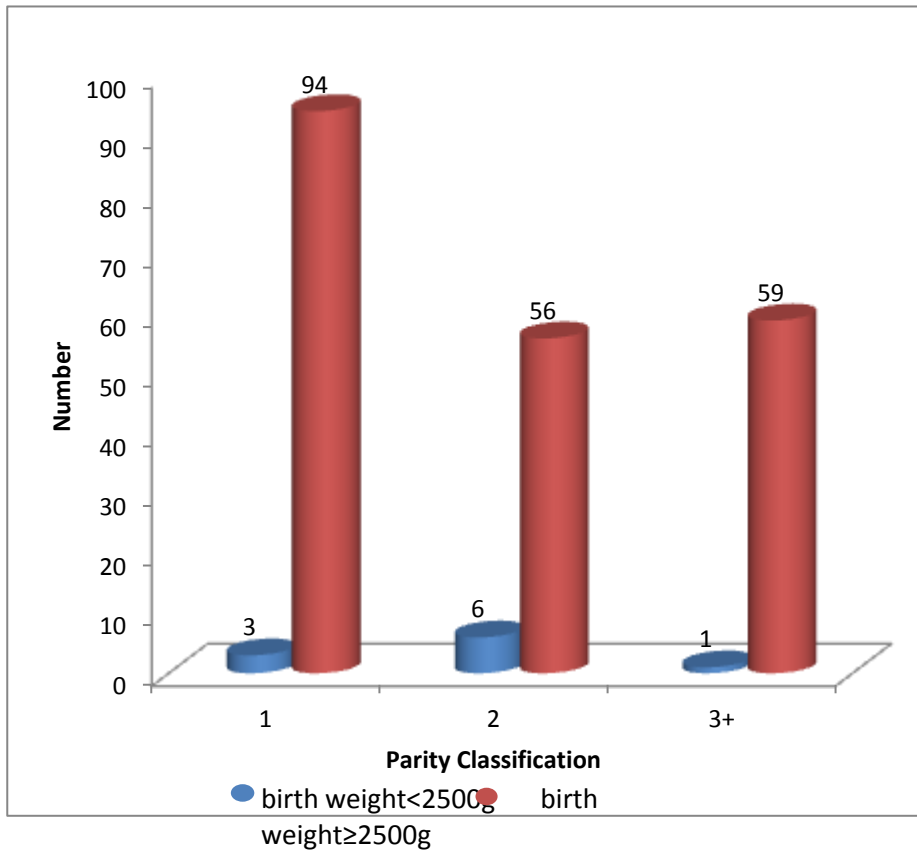
**Figure 1:** Maternal age group in relation to the mean birth weight

Table 3 and Figure 2 show the percentage of low birth weight babies and babies with birth weight above 2500g according to the birth order. It can be seen that majority of low birth weight

babies are found at the 2<sup>nd</sup> para followed by Primipara, and the least at birth order  $\geq 3$ . Chi-square values fail to show any significant influence of parity on birth weight of the newborn babies.

**Table 3:** Proportion of newborns according to birth weight and parity

Parity	Mean Birth weight (g)		$\chi^2$ value (p)
	<2500g	$\geq 2500g$	
	N (%)	N (%)	
1	3 (1.37)	94 (42.92)	5.355 (0.0686)
2	6 (2.74)	56 (25.57)	
3 and above	1 (0.45)	54 (24.65)	
Total	10 (4.56)	209 (95.43)	



**Figure 2: Parity and birth weight**

## DISCUSSION

The mean birth weight of new born babies (combined sexes) of the present study population is 3.19kg, (males - 3.24kg and females - 3.14kg). Though the male babies are found weighing slightly heavier than their female counterparts, the difference however is statistically nonsignificant. It may be noted that present study sample show very few (4.56%) low birth weight babies. Bharati *et al.* (2011) had observed that the North-east zone of India show the lowest prevalence of low birth weight. Comparing our results to other tribes of North-east India, it is found that the present study population show higher mean birth weight (3.19kg) as compared to tribes of Arunachal Pradesh like Tangsa of Nampong, 2.80kg (Mondal,1998) and Singpho-Nocte of Changlang, 3.13kg (Sarkar and Saikia, 2000).

Many studies have revealed that there are multiple factors, including maternal age and parity, which determine birth weight. An attempt was made in the present article to find the influence/bearing of maternal age and parity on birth weight. For both these variables, Chi-square test was applied between birth weight less than 2500g and  $\geq 2500$ g; however, no statistically significant influence of maternal age and parity on birth weight was observed. In India, similar findings were reported by Joshi *et al.* (2013) in their study among 441 mother-infant pairs of gas affected areas of Bhopal. Similar findings were observed among the East Midlands, UK by Wilcox *et al.* (1996). No significant influence of maternal age and parity on low birth weight of babies were observed for infants of Lahore, Pakistan (Shami and Khan 1980) and the Tangsa tribal infants of Arunachal Pradesh (Mondal 1998). On the other hand, among the populations of Bengalees, Kolkata, (Bisai *et al.*, 2006) Dehradun district (Padda *et al.*, 2011), Khoy city of Iran (Tabrizi and Sarawathi 2012), Rewa, Madhya Pradesh (Dhankar *et al.*, 2013) and Nigeria (Amosu 2014) a higher birth weight with advancing age of mothers and increased parity or birth order was observed. Kapoor *et al.* (2012) observed a positive association between young mothers and low birth weight babies among the Punjabi Khatri and Arora mothers of New Delhi. A recent attempt was made by Suryawanshi and Kaveri (2015) report the presence of low birth weight in relation to maternal age as well as birth order at 1, 4 and 5. One of the reasons for not finding any influence of maternal age and parity on birth weight in the present study could be due to small sample (4.56%) of low birth weight babies.

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