

BRIEF REPORTS

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Birth Weight Pattern in Karnataka

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A number of indicators of early maturity of newborn are accepted worldwide, but there is no agreed overall definition. The most commonly used indicator of newborn maturity is birth weight(1). The birth weight of an infant is highly sensitive in two important aspects(2); firstly, it is strongly condi-

tioned by the health and nutritional status of the mother. Secondly, it is the single most determinant of the chances of newborn to survive and experience healthy growth and development. It is, therefore, considered as a subject of clinical and epidemiological investigation and target for public health interventions(1).

It is a common experience that data on mean birth weight and low birth weight are available mostly from hospital based studies in different parts of the world. But only few such data are available from developing countries such as India on birth weight pattern among rural population. The present study was undertaken with an objective to find out the pattern of birth weight in general by utilizing the data available from well established rural maternity homes in the coastal areas of Udupi taluk.

Material and Methods

Udupi is one of the coastal taluk in South Kanara district in Karnataka. The villages are densely populated and a good network of roads and transport exists in the taluk. The overall literacy rate is high (78.5%) and female literacy in particular is

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as high as 73.0%(3). The mean age at marriage for females is 21.4 years. Over 90% of pregnant mothers receive antenatal care and institutional deliveries are usual. The contraceptive prevalence is 43% (4).

A network of six rural maternity and child welfare (RMCW) homes provide maternal and child health to a population of 60,000 residing in coastal areas of Udupi taluk. These homes have been in existence for the past 25 years. Each home or centre caters to a population of 10,000. All these centres are connected to Kasturba Hospital by roads and telephone.

Each centre is equipped with a labor room, ten bedded postnatal ward, a small laboratory and a minor operation theatre. Round the clock maternity services are available and as many as 1200 deliveries are conducted in these centres every year. Most of the normal deliveries are conducted by trained ANM who have been in position for the last 18-20 years and difficult cases are evacuated to the Kasturba Hospital, Manipal by a flying squad service.

The ANMs have been adequately trained to record birth weight using UNICEF infant weighing machine (lever balance type) to the nearest 20 g after correcting the zero error. All the babies are weighed within one hour of delivery. The weighing machines are being checked periodically and standardized.

Information regarding birth weight and its correlates such as age of the mother, parity, period of gestation and religion were obtained retrospectively by reviewing the delivery records of the births that occurred in the RMCW homes during the period from July 1985 to June 1988. Only singleton live born babies were included for the study analysis. Information pertaining to birth

weight were subjected to statistical analysis utilizing computer software package SPSS/PC+.

The gestational age of the newborn was assessed after reviewing antenatal case sheet of the mothers taking into account the last menstrual period (LMP) and/or period of gestation assessed by the obstetricians during antenatal check ups. The main limitation of this study is that birth weight of newborns born at other hospitals were not included because of logistic constraints. The terms used in this study were defined as(7): (i) *Low birth weight*: An infant whose birth weight is less than 2500 g; (ii) *Very low birth weight*: An infant whose birth weight is less than 1500 g; (iii) *Preterm baby*: Any infant who is born before completion of 37 weeks of gestation; and (iv) *Term baby*: Any infant who is born between 37 and 41 completed weeks gestation.

Results

Of the 4498 singleton liveborn babies during the 4 years, 2308 (51.3%) were boys and 2190 (48.7%) were girls. Nearly, 80% newborns weighed between 2500 and 3499 g. Low birth weight and very low birth weight babies accounted for 13.3% and 0.4% neonates, respectively. The overall mean birth weight was 2823.6 ± 417.8 g; boys (mean weight 2850.2 ± 424.0) were heavier than girls (mean weight 2765.4 ± 409.2) ($p < 0.001$). The distribution of mean birth weight according to age of the mothers is depicted in *Table I*. The mean birth weight increased with the age of the mother ($p < 0.001$).

The mean birth weight according to parity of the mothers is shown in *Table II*. The mean birth weight was lowest in primipara (2767.7 ± 407.0 g) and highest in grand multipara (2897.6 ± 404.7 g). This increase

TABLE I - Mean Birth Weight in Relation to Maternal Age

Maternal age (years)	No.	(%)	Mean	(SD)	95% confidence limits
19	410	(9.1)	2704.2	(404.3)	2664.0 - 2743.3
20-24	1250	(27.7)	2817.5	(400.3)	2795.3 - 2839.7
25-29	1856	(41.2)	2843.6	(426.1)	2824.2 - 2863.0
30- 34	764	(16.9)	2859.2	(415.2)	2829.8 - 2888.7
35	218	(5.1)	2787.1	(437.6)	2729.0 - 2845.2

p<0.001.

TABLE II - Mean Birth Weight in Relation to Parity of the Mother

Parity of the mother	No.	(%)	Mean	(SD)	95% confidence limits
1	1333	29.6)	2765.7	(406.9)	2743.8 - 2787.5
2	1363	(30.3)	2831.9	(423.4)	2809.5 - 2854.4
3	944	(20.9)	2854.7	(412.3)	2828.3 - 2880.9
4	498	(11.0)	2844.6	(432.6)	2806.6 - 2882.5
	360	(8.2)	2897.6	(404.7)	2855.8 - 2939.4

p<0.001

in mean birth weight with increase in parity of the mothers was statistically significant (p<0.001). The term babies and preterm babies accounted for 91.3% and 7.5%, respectively. The mean birth weight increased with increase in gestational age (p<0.001).

Discussion

The overall mean birth weight was 2823.6 ± 417.8 g. The mean birth weight in the present study is 500 g and 700 g less than that of average birth weight of the American and European counterparts, respectively(1). However, it is comparable to the studies conducted by ICMR and

Dutta Banik *et al.* (6,7), while few studies found lower mean birth weight(8,9,10). Although the observed difference between mean birth weight of males and females was only 55 g, it was found to be statistically significant(p<0.001).

Table I reveals that teenage mothers accounted for 9.1% whereas 69% of the mothers were in the age group of 20-29 years. This could be attributed to increase in mean age at marriage among females in this region similar to the findings of the earlier study(11).

Table II reveals nearly 30% of the

mothers were primipara and 51% were of para 2 and 3. Multiparity in the present study accounted for 19% which suggests that acceptance of a small family norm is a usual practice in this region(11).

The mean birth weight among the teenage and primipara mothers in this study was higher compared to other reports(6,8,9). This could be attributed to better utilization of quality MCH care which are readily accessible to the beneficiaries at these RMCW homes. This is further substantiated by the fact that over 95% of the pregnant women had a minimum of 3 antenatal check ups and 90% of the deliveries are institutional. The preterm babies were lighter (mean birth weight 2087.5 + 353.0 g) compared to term babies (mean birth weight 2875.9 + 353.6 g). The trend of increase in mean birth weight with increase in gestational age was also observed by others(8). The coefficient of determination ($R^2=0.27$) suggest that 27% of the mean birth weight could be explained by the influence of gestational period alone. There was no difference between mean birth weight among babies of different religious groups ($p>0.05$). The mean birth weight of infants born in different years was studied to observe the trend if any, but there was no such trend ($p>0.05$).

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