



Original Research Article

# Comparative study of Socio-economic status of mothers who delivered term low birth weight babies with mothers who delivered normal birth weight babies in a tertiary care rural hospital

R. Sambasiva Reddy<sup>\*</sup>, Y. Venugopal Sarma

Department of Pediatrics, Narayana Medical College and Hospitals, Nellore, Andhra Pradesh, India

\*Corresponding author email: [research.nmch@rediffmail.com](mailto:research.nmch@rediffmail.com)

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## Abstract

**Objectives:** To compare the demographic profile of mothers who delivered term low birth weight babies with that of mothers who delivered normal birth weight babies and study the association between the demographic variables of mother and the delivery of low birth weight babies.

**Material and methods:** Study conducted at Department of Pediatrics and Department of Obstetrics of Narayana medical college hospital, Nellore, India. Participants were 120 postnatal mothers who delivered babies in the preceding 7 days. 60 mothers who delivered term low birth weight babies and 60 mothers who delivered normal birth weight babies were included in the study. Five demographic variables: age of the mothers at the time of conception, educational status of the mothers, monthly family income, occupation of the mothers and presence or absence of consanguinity were recorded. Using chi-square test these variables are compared between two groups of mothers and association of these demographic variables with the delivery of low birth weight babies is studied.

**Results:** Significant association was found between the family income and low birth weight (P-value 0.002) and between consanguineous marriage and low birth weight (P-value 0.000). Significant association was not found between the age of the mothers and low birth weight (P value 0.924), between occupation of the mother and low birth weight (P value 0.15) and between educational status of the mother and low birth weight babies (P value 0.062).

**Conclusion:** Low family income and consanguineous marriage have significant association with delivery of low birth weight babies.

### Key words

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Socio-economic status, Low birth weight, Gestational age, Nutritional level.

### Introduction

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The World Health Organization (1992) defines low-birth-weight as a weight at birth of less than 2500 grams, irrespective of gestational period, and recommended an additional demarcation of 1500 grams to define very low birth weight. However, the information on gestational age would help to separate infants who are born premature, but this information is rare in developing countries [1-4]. In most of the developing countries, low-birth-weight data are biased due to majority of births taking place outside the healthcare facilities, and mothers are unable to provide the data because infants are mostly not weighed at the time of birth. The World Health Organization (1995) estimated that there is a large gap between the incidence of low-birth-weight babies in developing countries (19%) and developed countries (7%). According to the UNICEF (2004) estimates, more than 20 million infants are born with low-birth-weight in the world and low-birth-weight babies are concentrated in two regions of the developing world: Asia (72%) and Africa (22%) [3]. India alone accounts for 40% of low-birth-weight babies in the overall developing world and more than half of those born in Asia. Out of these, two-thirds are term babies. India, a developing country with high infant mortality rate (60 per thousand live births) is also characterized with substantial number of neonatal deaths [5]. In a few term low birth weight babies an identifiable cause for the low birth weight like disease in the mothers such as pregnancy induced hypertension are found. But

in a significant proportion of these babies, no identifiable cause is found. It is thought that maternal demographic factors play a role in the causation of low birth weight babies. The babies born with low birth weight are prone for both immediate and late complications. Immediate complications are birth asphyxia, hypoglycemia, hypocalcemia, hypothermia increased risk of infections etc. long term complications are failure to thrive, diabetes mellitus, hypertension learning difficulties etc. The factors that affect birth-weight may be biological or socio-economic-demographic and also related to the health services. Mainly mother's health condition, history of previous low birth delivery, illness, complication in pregnancy, and past adverse pregnancy outcome may cause low birth weight [6-8]. Even outdoor air pollution results in delivery of low birth weight babies [9]. Maternal nutritional status is a prime factor of the new born baby's weight. Nutritional level of mother is also influenced by several socio-economic and demographic factors. Joshi, et al. (2005) estimated in Swaroop Rani Nehru Hospital in Allahabad during 2001–2002, that 34.4% newborn were low-birth-weight babies [10].

The management of low birth weight babies needs lot of man power, infrastructure and money which is difficult to afford in developing countries. This study aims at identifying the maternal demographic risk factors that can cause low birth weight in the babies so that efforts can be put in eliminating these risk factors.

## Material and methods

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The study was carried between February 1<sup>st</sup> 2012 and November 30<sup>th</sup>, 2012. Two groups of post natal mothers who delivered babies in the preceding 7 days were included in the study. First group included mothers who gave delivery to term low birth weight babies. Low birth weight was defined as birth weight less than 2500 grams. Term was defined as completion of 37 weeks of gestation mothers who had significant illnesses during pregnancy were excluded and mothers who delivered babies with significant congenital anomalies were excluded. Second group included mothers who delivered normal birth weight babies normal birth weight was defined as birth weight of 2500 to 4000 grams. Each group included 60 mothers. Mothers were interviewed and 5 demographic variables age of the mother at conception, educational status of mother occupation of the mother. Monthly family income and history of consanguinity were recorded.

### Data analysis

The data of both groups of mothers was compared using chi-square test and association between the demographic variables and low birth weight was studied. Statistical analysis was done using SPSS version 16.0.

## Results

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36 out of 60 low birth weight babies belonged to families with monthly income less than Rs. 5000 where as 19 out of 60 normal birth weight babies belonged to families with monthly income less than Rs. 5000. There was low significant association between low birth weight and family income (p value 0.002) (**Table – 1**).

27 out of 60 low birth weight babies are the product of consanguineous marriage but only 11 out of 60 normal birth weight babies are the

products of consanguineous marriage. There was significant association between parental consanguinity and low birth weight babies (p value 0.000) (**Table – 2**).

The incidence of low birth weight babies was more in mothers with less education but the association between maternal education and low birth weight babies was not significant (p value 0.062) (**Table – 3**). There was no significant association between the occupation of the mother and delivered of low birth weight babies. (**Table – 4**) There was no significant association between the maternal age and low birth weight. (**Table – 5**)

## Discussion

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This study showed the influence of the maternal demographic profile on the outcome of the pregnancy. In the last few decades there is an increase in the average birth weight of the babies. This improvement is to some extent due to changing demographic profile of the mothers. There is an increase in the age at conception.

Maternal education, occupational status, and per capita income of the family per month were significantly correlated with birth-weight but not the sex and the religion of the baby. Young mothers, women with low antenatal care, and also with more children, are at relatively higher risk of having low birth weight babies [11, 12]. Mothers in deprived socio-economic conditions frequently have low birth weight babies. In such conditions, the infant's low birth weight stems primarily from mother's poor nutrition and health over a long period, including during pregnancy, and the high prevalence of specific infections, or from pregnancy complications, underpinned by poverty. Improved nutritional status of the mother due to increased per capita income and increased health awareness due to improved literacy but still there are large number of pregnancies affected by the maternal

demographic variable. In our study we found significant association between the family income and low birth weight. Significant association was also found between parental consanguinity and low birth weight. The results of our study are similar to the results of similar studies conducted in many developing countries like Nepal, Bangladesh etc. Physically demanding work during pregnancy also causes to poor fetal growth. Blanc and Wardlaw (2005) estimated from the data of 62 Demographic Health Surveys (DHS) from 42 different countries that percentage of infants not weighed at the time of birth varies from one percent to 96% [13]. Our study once again emphasizes the importance of the need for awareness of the adverse results of consanguineous marriages. Some other studies have simply highlighted the association between social factors and low birth weight and suggested that poverty could affect maternal health status at the time of conception through lower physiologic reserves or that unhealthy women are more likely to be concentrated in the lower social classes in the society.

The drawback of the study is that the sample size is small and only few demographic variables were included in the study. There are many variables which can influence the outcome of pregnancy like maternal height and weight at the time of conception maternal weight gain during pregnancy etc. We could not assess their variables as the study was conducted after the delivery.

### Conclusion

Among socio-economic factors, low family income and consanguineous marriage, and education of woman associated with low birth weight. The public health programs in this area do seek to provide care to the newborn and also to work towards equity in such care so that the deprived sections are also assured of at least the minimum required care.

### References

1. World Health Organization and United Nations Children's Fund, 1992. Low Birth Weight: A Tabulation of Available Information, Geneva: WHO and UNICEF.
2. World Health Organization. The Incidence of Low Birth Weight - A Clinical Review Available Information. World Health Statistic Quarterly, 1980; 33(3): 197-224.
3. UNICEF, 2004. Low Birth Weight: Country, Regional and Global Estimates. New York: UNICEF.
4. Channon A, M. McDonald, S. Padmadas. 2006. Retrospective Birth Weight Data in Developing Countries: Can they be Trusted? A Study of 6 DHS Countries. Workshop on the Exchange of Research Experience Involving Large Scale Survey Data Analysis. Groningen, Netherlands, 2-3 February 2006.
5. International Institute for Population Sciences. 2001. Reproductive and Child Health-Rapid Household Survey (RCH-RHS 1 & 2) 1998-99. Mumbai: IIPS. 2005. India Facility Survey. Mumbai: IIPS.
6. Idris M.Z., A. Gupta, U. Mohan, A.K. Srivastava, V. Das. 2000. Maternal Health and Low Birth Weight among Institutional Deliveries. Indian Journal of Community Medicine, 2000; 25(4): 156-60.
7. Kabir Z. Low Birth Weight and Mortality: A Future Marriage of Convenience. Indian Pediatrics, 2002; 39: 1063-64.
8. Rafati S., H. Borna, M. Akhvirad, N. Fallah. Maternal Determinants of Giving Birth to Low Birth Weight Neonates. Archives of Iranian Medicine, 2005; 8(4): 277-81.
9. Bobak M. Outdoor Air Pollution, Low Birth Weight, and Prematurity.

- International Health Perspective, 2000; 108(2): 173–76.
10. Joshi H.S., S.H. Subba, S.B. Dabral, S. Dwivedi, D. Kumar, S. Singh. Risk Factor Associated with Low Birth Weight in Newborns. Indian Journal of Community, 2005; 30(4): 10–12.
  11. Aras R., N. Pai. Pregnancy at Teenage- Risk Factor for Low Birth Weight. Indian Pediatrics, 1989; 26: 823–25.
  12. Yasmin S., D. Osin, E. Paul, A. Costello. Neonatal Mortality of Low Birth Weight Infants in Bangladesh. Bulletin of the World Health Organization, 2001; 79(7): 608–14.
  13. Blanc A.K., T. Wardlaw. Monitoring Low Birth Weight: An Evaluation of International Estimates and an Updated Estimation Procedure. Bulletin of World Health Organization, 2005; 83(3): 178–85.

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**Table – 1:** Association between baby weight and Income status of family.

		Income Status		Total	p value
		below 5000	above 5000		
Baby weight	Low birth weight	36	24	60	0.002
	Normal birth weight	19	41	60	
Total		55	65	120	

**Inference:**

Since the p-value (0.002) is less than the significance level (0.05), there is a significant relationship observed between baby weight and Income status.

**Table – 2:** Association between baby weight consanguinity.

		Consanguinity		Total	p value
		Absent	Present		
Baby weight	Low birth weight	33	27	60	0.000
	Normal birth weight	11	49	60	
Total		44	76	120	

**Inference:**

Since the p-value (0.000) is less than the significance level (0.05), there is a significant relationship observed between baby weight and consanguinity.

**Table – 3:** Association between baby weight and education status of mother.

		No Education	High School	Graduation	Total	p-value
Baby weight	Low birth weight	10	45	5	60	0.062
	Normal birth weight	6	40	14	60	
Total		16	85	19	120	

**Inference:**

Since the p-value (0.062) is greater than the significance level (0.05), there is no relationship between baby weight and Education Status.

**Table – 4:** Association between baby weight and occupation status of mother.

		OCC_CAT			Total	p value
		Labour Work	Household Work	Office Work		
Baby weight	Low birth weight	28	26	6	60	0.15
	Normal birth weight	18	32	10	60	
Total		46	58	16	120	

**Table – 5:** Association between baby weight and age group of mother.

		Age group			Total	p-value
		below 21 years of mother	21 - 30 years of mother	above 30 years of mother		
Baby weight	Low birth weight	9	41	10	60	0.924
	Normal birth weight	8	43	9	60	
Total		17	84	19	120	

**Inference:**

Since the p-value (0.924) is greater than the significance level (0.05), there is no relationship between baby weight and age group.