

Frequency of Low Birth Weight in newborns of different socio-economic groups in Rawalpindi

Tahira Sadiq, Farah Rashid, Ayaz Bhatti

Departments of Community Medicine, Islamic International Medical College and Yusra Medical and Dental College, Islamabad

Objective: To determine the frequency of Low Birth Weight amongst neonates born in different socio-economic groups.

Methodology: It was a cross-sectional study conducted in different public and private sector hospitals of Rawalpindi during 2008. A total of 288 neonates were included in the study. A pre-tested structured questionnaire was used to interview the 288 mothers selected through stratified sampling technique. Demographic characteristic, socio-economic status and different risk factors for low birth weight were explored.

Results: Overall frequency of low birth weight

was 19%, which was highest amongst the low socio-economic group. In low social class, the low birth weight was 10% ($r = -0.65$, $P = 0.001$); in middle social class, it was 6% ($r = -0.57$, $P = 0.01$) and in upper social class, it was 3% ($r = -0.48$, $P = 0.03$).

Conclusion: The findings of our study strengthens the evidence provided by other studies that the low birth weight is effected by the social class and highest among the low socio-economic group. (Rawal Med J 2013;38:61-63).

Key words: Low Birth Weight, socio-economic status, infant mortality, maternal risk factors.

INTRODUCTION

Low Birth Weight (LBW) is one of the major public health challenges and significant reason of infant mortality in developing world. According to WHO, LBW is defined as a birth weight less than 2500gms irrespective of the age of the gestation.¹ WHO estimates that globally about 25 million LBW babies are born each year consisting 17% of all live births, nearly 95% of them in developing countries.¹ The gravity of the problem of LBW has now been universally recognized and it is included in one of the targets of Millennium Development Goals (MDGs) to reduce infant mortality and improve maternal health status.² Infant mortality rate (IMR), a measure of child survival, is considered to be one of the strongest indicators of a country's well being, as it reflects social, economic and environmental conditions in which children (and others in society) live, including their health care. Recent studies have sought to identify the social factors most relevant to health. Some consider that health may be an important determinant of opportunities in life and this process, termed "selection by health", and suggests that health "selects" people in different social strata.^{3,4}

LBW is more prevalent in low socio-economic

group due to inequitable distribution of resources in different socio economic groups. Despite efforts to decrease the proportion of newborns with LBW, success has been quite limited. Among the socio-economic factors are income, education, occupation, house hold leadership and gender differences related to roles within the family.^{5,5} Main focus should be given to improving maternal health through good prenatal care, improving food intake, preventing and treating diseases, educating girls and expectant mothers and preventing teenage pregnancies, rather than "treatment" of LBW babies born later.⁶ The aim of this study was to determine the frequency of LBW amongst different socioeconomic groups.

METHODOLOGY

A cross-sectional study was conducted in different randomly selected public and private tertiary care hospitals of Rawalpindi in 2008. A total of 288 mothers were selected through stratified sampling. Sample size of 288 was calculated by WHO software by keeping confidence interval 95%, absolute precision (d) 0.05 and prevalence of low birth weight 25%. After taking the informed consent, they were interviewed through structured

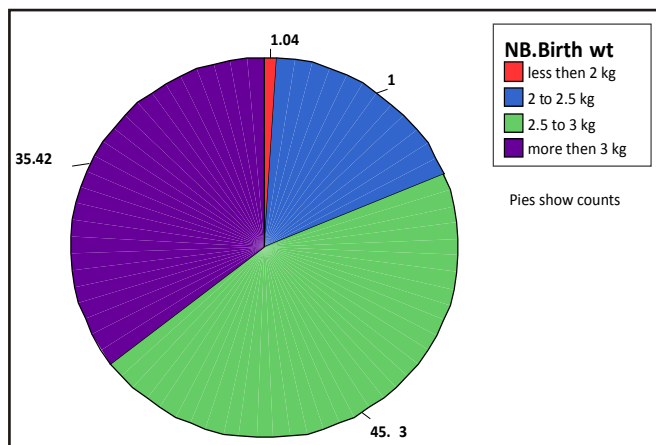
questionnaire regarding the birth weight of newborn, different maternal risk factors which can lead to LBW like age, education, occupation, parity, premature birth, mode of delivery, previous history of LBW, height and weight of mother, previous obstetric history of the mother, history of any infectious and chronic disease and maternal anaemia.

Socio-economic class was explored by asking the monthly income of the head of the family, educational status, occupation, housing conditions, number of family members and living standards. Socioeconomic groupings was done on the basis of monthly income i.e. monthly income less than Rs. 10000 (lower), 10000-20000 (middle) and more than Rs. 20000 (upper). Data was analysed using SPSS software. Pearson's Correlation was applied between the different social classes and birth weight of the newborn.

RESULTS

Overall frequency of LBW was 19%. Figure 1 shows the distribution of birth weight amongst the newborns. A strong inverse correlation was found between LBW and socioeconomic group. Table 1 shows the frequency of LBW in different social classes with Pearson's correlations.

Figure 1: Distribution of Newborn's birth weight.



The demographic profile of the participant's showed that majority of the participants (45%), belonged to the low socio economic group and were living in a combine family system (55%). In pattern of education, 29% of the mothers were illiterate and 64% were housewives. Regarding age of the

mothers, 30% were less than 18 years and 64 % were between the ages of 18 to 35 years.

Table 1: Frequency of LBW in different social classes.

Social class	Frequency of LBW	Pearson's correlation (r)	P-value
Low	10%	-0.68	0.001**
Middle	6%	-0.57	0.01*
High	3%	-0.48	0.03

*Statistically significant at <0.05

**statistically highly significant at <0.01

Twenty five percent of the mothers gave positive history of LBW in previous children. Hemoglobin level in mothers during last pregnancy showed that 47% had <10gm, 44% had >10 gm and 8% did not know their hemoglobin level. Regarding the duration of pregnancy, 75% reported term delivery, 19% had pre term deliveries and 6% had post term deliveries.

DISCUSSION

Low birth weight special concern is on socio economic factors which show that populations with greater inequities have a greater proportion of newborns with LBW.⁷ These indicators could be monthly income of the family, age, nutritional status and empowerment of women. There is a great discrimination of LBW among rich and poor, urban and rural settings, level of education, and number of children in family and health of mother.^{3,8} The present study focused mainly on social class and developing association between LBW and different social classes and highlighting the issue that poverty and health inequalities indirectly ruining the future of our nation as under nutrition that arises as a result of a combination of low birth weight, suboptimum feeding, and infections predisposes newborn to irreversible effects on physical and psychological development, educational attainment, income, and the birth weight of subsequent offspring. Moreover, prevention has a vital role in it as these all are preventable causes.

Several longitudinal analyses showed an exceptionally large increase in risk of LBW among children born to women whose prior pregnancy ended in LBW, maternal education, maternal age, age, parity risk, marital status, and smoking during pregnancy served as covariates.⁹⁻¹¹ Maternal age is a

risk factor which increases LBW by 3.79 times.¹² Gestational age, in turn is a determinant of the weight and size of children at birth. In addition, fetal growth retardation has also been indicated to be linked to maternal age.¹³

Studies in the developed countries have associated ethnicity as a marker of low social class with poor neonatal and newborn health through factors such as maternal physical and mental health, health awareness and maternal social status/education.¹⁴ The results shown in this study, confirm the findings of earlier studies in Pakistan.^{14,15} The progress has been made to reduce maternal and infant mortality but there is insufficient progress due to weak health systems, as substantial inadequacies exist in planning, financing, human resources, infrastructure, supply systems, governance, and monitoring. Effective service delivery in communities and health facilities, and creation of centers of excellence for health and nutrition policy research are essential for change. Appropriate health interventions and political commitment of the highest order is needed to address this challenge.

CONCLUSION

Low birth weight was significantly higher in low socioeconomic group (10%) as compare to upper socioeconomic group (3%) which shows social class has a significant role in health of the newborn. Poverty alleviation and social support programs should be geared towards women of reproductive age aiming to improve maternal and neonatal health.

ACKNOWLEDGMENT

We would like to thank all the participants of the study.

Author Contributions:

Conception and design: Dr Tahira, Dr Farah, Dr Ayaz
 Collection and assembly of data: Dr Tahira, Dr Farah, Dr Ayaz
 Analysis and interpretation of the data: Dr Farah, Dr Ayaz, Dr Tahira
 Drafting of the article: Dr Farah, Dr Tahira, Dr Ayaz
 Critical revision of the article for important intellectual content: Dr Farah, Dr Ayaz, Dr Tahira
 Statistical expertise: Dr Farah, Dr Ayaz, Dr Tahira
 Final approval of the article: Dr Farah, Dr Ayaz, Dr Tahira
Conflict of interest: None. Grants: None.
Corresponding author email: farah.rashid@ymdc.edu.pk
 Mobile: 0333-521-4394
 Rec. Date: Jun 18, 2012 Accept Date: Oct 12, 2012

REFERENCES

1. World Health Organization. Geneva: WHO; c2010. Low birth weight newborns (percentage); (Online) (Cited 2010 Oct 16). Available from URL: <http://www.who.int/whosis/indicators/compendium/2008/2bwn/en/index.html>.
2. Millennium Development Goals: progress towards the health-related Millennium Development Goals, Fact sheet N°290. World Health Organization 2011
3. Aftab S, Ara J, Kazi S, Deeba F. Effects of poverty on pregnant women. *Pak J Med Res* 2012;51:05-9.
4. Tores LP, Arreala Constantino P, Hernandez SF, Macias ER. Socio economic factors and low birth weight in Mexico. *BMC-Public Health* 2005;3:V5:5-20.
5. Sachdev HP. Low birth weight in South Asia. *Int J Diab* 2008;21:13-33.
6. Rizvi S.A, Hatcher J, Jehan I, Qureshi I. Maternal risk factors associated with low birth weight in Karachi. *Eastern Mediterr Health J* 2007;13:12.
7. Valero De Bernabe J, Soriano T, Albaladejo R, Juarranz M, Calle ME, Mart nez D, et al. Risk factors for low birth weight: a review. *Eur J Obstet Gynecol Reprod Biol* 2004;116:3-15.
8. Di kute J, Padaiga Z, Grabauskas V, Nadisauskiene RJ, Basys V, Gai aukiene A. Maternal socio-economic factors and the risk of low birth weight in Lithuania. *Medicina (Kaunas)* 2007;40:475-82.
9. Hack MD, Flannery J, Schluchter M, Cartar L, Borawski E, Klein N. Outcomes in young adulthood for very low birth weight infants. *N Engl J Med* 2005;346:149-57.
10. Kramer MS. Determinants of low birth weight: methodological assessment and meta-analysis. *Bull World Health Org* 1997;65:663-737.
11. Kramer MS, Seguin L, Lydon J, Goulet L. Socio-economic disparities in pregnancy outcome: why do the poor so poorly? *Paediatr Perinatal Epidemiol* 2000;14:194-210.
12. Badshah S, Mason L, McKelvie K, Payne R, Lisboa PJ. Risk factors for low birthweight in the public-hospitals at Peshawar, NWFP-Pakistan. *BMC Public Health* 2008;8: 197.
13. Khoshnood B, Bouvier-Colle MH, Leridon H, Blondel B. Impact of advanced maternal age on fecundity and women's and children's health. *J Gynecol Obstet Biol Reprod (Paris)* 2008;37:733-47.
14. Rahman A, Lovel H, Bunn J, Iqbal Z, Harrington R. Mothers' mental health and infant growth: a case-control study from Rawalpindi, Pakistan. *Child Care Health Dev* 2007; 30:21-7.
15. PIHS: Pakistan Integrated House Hold Survey. Federal Bureau of Statistics, Pakistan, 2006-2007. (Online) 2008 (Cited 2008 Dec 11). Available from URL: <http://www.statpak.gov.pk>.