

Low birthweight delivery: Prevalence and associated factors as seen at a tertiary health facility

HAA Ugboma, CN Onyearugha¹

Departments of Obstetrics and Gynecology, University of Port Harcourt Teaching Hospital, Port Harcourt, Rivers State,
and ¹Pediatrics, Abia State University Teaching Hospital Aba, Abia State, Nigeria

Abstract

Background: Low birth weight deliveries are major causes of a huge health burden on poor economies around the globe. It is even more worrisome in developing countries.

Materials and Methods: The obstetric records of all low birth weight (LBW) deliveries were reviewed from 1st June 2005 to 30th May 2009.

Results: The prevalence of LBW deliveries was 8.3%. Of the LBW babies, 68.4% were preterm, 53.6% were small for gestational age (SGA) and 12.6% were products of multiple gestations. Predominant factors associated with LBW delivery included nulliparity, low parities (1 and 2), parturient aged 25-35 years (80.6%), hypertensive disorders of pregnancy, and short birth spacing (84.4%).

Conclusion: Most LBW babies were preterm delivered by low parity parturient aged 25-35 years with short inter-pregnancy intervals. Effective family planning and antenatal services provided particularly for these categories of potential parturient could help to curb the incidence.

Key words: Associated factors, low birth weight, prevalence

Date of Acceptance: 03-Aug-2012

Introduction

Low birth weight is defined as birth weight less than 2500 g irrespective of gestational age.^[1] It occurs worldwide but by far more commonly in developing countries.^[2] It often results from prematurity or intrauterine growth restriction^[3-4] though more from the latter than the former in developing countries.^[5] About one quarter of newborns in developing countries start life with impaired growth *in utero* often resulting in LBW at delivery.^[6-8] Complications arising from this include infections, hypoglycemia, hypothermia, jaundice and perinatal asphyxia often resulting in significant perinatal mortality.^[2] LBW infants are also predisposed to developing neurological problems including poor attention span and have much higher burden of disease throughout life.^[7] They often remain undernourished throughout childhood and adolescence and easily grow into undernourished women of childbearing age who themselves deliver LBW babies.^[8] It is easier and better to prevent the

delivery of a LBW baby than preventing the perinatal morbidity and mortality, developmental problems, failure to thrive and other life time complications consequent on its delivery.

Prevailing information on this subject is needed to audit our success in preventing this mostly avoidable situation. Therefore, this study is aimed at determining the prevalence and associated factors to LBW delivery in our environment with a view to deriving measures to curb the incidence.

Materials and Methods

This was a retrospective study conducted over a four-year period (June 2005 to May 2009) with an annual hospital delivery average of 2,500.

| Access this article online | |
|----------------------------|---|
| Quick Response Code: | Website: www.njcponline.com |
| | DOI: *** |
| | PMID: ***** |

Address for correspondence:

Dr. H. A. A. Ugboma,
Department of Obstetrics and Gynecology,
University of Port Harcourt, Port Harcourt, Rivers State, Nigeria.
E-mail: haugboma@yahoo.co.uk

The study centre is a 156-bed obstetric unit in a 649-bed tertiary hospital in Port Harcourt, Rivers State, south-south, Nigeria, covering the urban populace and the immediate surrounding local government areas, and four states. Information was collected by the authors and the hospital ethical committee board gave approval for the study.

Records of all deliveries in the department are documented in obstetric registers in the labor and isolation wards and the main theatre. Relevant information extracted included the birth weight, sex, gestational age, Apgar score of the newborn; the age, parity, disorders of pregnancy and labor complications in the mother. Data such as booking status, level of education and birth spacing of the mother were extracted from antenatal case notes retrieved from the Medical Records Department.

The study included all LBW newborns delivered (defined as birth weights less than 2500 g) who did not fall within the exclusion criteria. The exclusion criteria included out born babies, babies with gross congenital malformations, macerated stillbirths and those with doubtful or unknown gestational age. Parity of the parturient in this study referred to the parity before the conception of the index LBW baby.

Data obtained was analyzed using the statistical software Epi-info Version 6.04. A chi square was used to test for significance. A *P* value of less than 0.05 was taken as significant. Figures are represented in simple percentages.

Results

A total of 10,265 deliveries occurred during the study period. Of these, 854 were LBW giving a prevalence of 8.3%. Fifty-two were excluded due to inadequacy of data; hence 802 were used for further analysis. They consisted of 364 (45.4%) males and 438 (54.6%) females giving a ratio of M:F = 1:1.7.

There were 54 multiple gestations comprising 49 LBW twin deliveries, 5 LBW triplet deliveries and 6 stillbirths. Few of the multiple gestations weighed over 2.5 kg.

Four hundred and thirty (53.6%) of the 802 LBW babies were small for gestational age (SGA); 362 (45.2%) were appropriate for gestational age (AGA); and 10 (1.2%) were large for gestational age (LGA). The mean gestational age of the LBW babies was 33.4 weeks (22-44 weeks). The mean birth weight of the LBW newborns was 1860 ± 221 g (420-2480 g) [Table 1]. For this study babies below 2.5 kg were considered LBW.

The mean birth weight of the females was higher than that of the males (1871 ± 211 g vs. 1852 ± 197 g; *P* = 0.760) though not significant.

There was a statistically significant difference between the LBW babies born preterm (68.4%) and those delivered at term and post term (31.6%); *P* = 0.002 [Table 1].

A high proportion (18.6%) of the LBW was stillbirth [Table 1].

The mean age of the mothers of LBW newborns was $27.4 + 3.45$ years (15-44 years).

The parturient women aged 25-35 years had a higher delivery of LBW babies than other age groups [Table 2]. Most of the parturient women with LBW deliveries (81.7%) were nulliparous and low parity (1 and 2) mothers [Table 2].

Greater percentage (66%) of mothers who delivered LBW babies had either secondary or tertiary education [Table 2]. As shown in Table 3, preterm delivery (57.4%) was by far the most common antenatal complication in parturient women with LBW babies while no complication was detected in 24.7%.

Table 1: Anthropometric characteristics/Apgar score of the low birth weight babies

| Gestational age (weeks) | Frequency | Percentage |
|-------------------------|-----------|------------|
| <37 | 548 | 68.4 |
| 37-42 | 244 | 30.4 |
| >42 | 10 | 1.2 |
| Birth weight (Grams) | | |
| <1000 | 45 | 5.6 |
| 1000-1499 | 89 | 11.1 |
| 1500-2499 | 668 | 83.3 |
| Apgar score | | |
| At 5 min | | |
| 0 | 149 | 18.6 |
| 1-4 | 43 | 5.4 |
| 5-6 | 58 | 7.2 |
| 7-10 | 552 | 68.8 |

Table 2: Socio-demographic/antenatal characteristics of the parturient women

| Mother's age (years) | Frequency | Percentage |
|----------------------|-----------|------------|
| <20 | 48 | 6.2 |
| 20-24 | 57 | 7.4 |
| 25-30 | 329 | 42.8 |
| 31-35 | 281 | 37.8 |
| >35 | 45 | 5.8 |
| Parity of mothers | | |
| 0 | 301 | 39.1 |
| 1,2 | 328 | 42.6 |
| 3,4 | 113 | 14.7 |
| >4 | 28 | 3.6 |
| Mother's education | | |
| No formal | 11 | 1.4 |
| Primary+incomplete | 251 | 32.6 |
| Secondary | 200 | 25.9 |
| Tertiary | 308 | 39.9 |

Table 3: Pregnancy complications in parturient women of low birth weight babies

| Complication | Frequency | Percentage |
|----------------------|-----------|------------|
| Preterm | 442 | 57.4 |
| PET | 61 | 7.9 |
| Multiple birth | 31 | 4.0 |
| APH | 13 | 1.6 |
| Breech | 11 | 1.4 |
| Transverse lie | 9 | 1.2 |
| Post date | 9 | 1.2 |
| Fibroid | 2 | 0.3 |
| Retroviral infection | 2 | 0.3 |
| No complication | 190 | 24.7 |

PET=Pre-eclamptic toxemia; APH=Ante partum hemorrhage

Five hundred and eight (66%) of the mothers were booked, 262 (34%) were unbooked; while 758 (98.4%) were married and 12 (1.6%) unmarried.

The birth intervals between the index LBW baby and the immediately preceding sibling occurred as follows: <1 year in 11 (1.4%) pregnancies; 1-2 years in 640 (83%) pregnancies; and >2 years in 119 (15.5%) pregnancies.

Discussion

Low birth weight deliveries constituted 8.3% of all deliveries during the study period in this analysis. This is higher than the 3.4% documented at the University of Benin by Mbazor and Umeora in 2007^[9] though the latter study was among term singleton newborns. It is lower than the 10-20% estimates of sub-Saharan Africa^[10,11] most probably because this is a tertiary health institution-based study and therefore likely to be an underestimate of the true prevalence. Also, most deliveries in developing countries in Africa, Nigeria inclusive, occur outside hospitals and are not reported.^[11,12] Though 68.4% of the LBW babies were preterm, 53.6% of them were small for gestational age. This is in keeping with previous documentations that a greater proportion of LBW in developing countries suffers intrauterine growth restriction.^[10-12] As many as 12.6% of the LBW babies comprised products of multiple gestation. Nigeria has the highest incidence of multiple gestation worldwide, and a lot of them are low birth weight babies.^[13,14] Stillbirths occurred in a large percentage of the LBW babies (18.6%) in this study. Stillbirths can occur in LBW babies at least partly from some factors causing intrauterine retardation and prematurity.^[10] Contrary to previous reports which showed young parturient women with higher incidence of LBW delivery,^[11,12] and another showing there was no relationship between maternal age and LBW delivery,^[9] our survey indicated that parturient women aged 25-35 years constituted the overwhelming majority (80.6%) with LBW deliveries [Table 2]. This may be due to the sole reason that they constitute the majority of our study population. Also, the majority of them (83%)

had only 1-2 years spacing between their last confinement and the index delivery.

However, in consonance with several previous documentations^[9,11] the nullipara and parturient women with low parities, 1, 2 in our series, had a high prevalence of LBW deliveries. Hypertensive disorders of pregnancy, which are a well-known factor in the etiology of LBW delivery^[15,16] was the second most common pregnancy complication observed in the parturient women of LBW babies in our study while prematurity ranked the most common pregnancy complication.

A substantial number (34%) of parturient women in our series were not booked. An unbooked expectant woman stands a worse chance of delivering a LBW baby than the booked.^[15] This is because those preventable and treatable conditions which can be managed in those attending antenatal care would not be so done in those not attending. Short birth spacing (inter-pregnancy interval less than 2 years), a well-identified contributor to LBW delivery^[9] was noted in 84.4% of parturient women in this survey. This is also true since the mother has not recovered fully from the previous confinement before starting another. Again, the issue of poverty and ignorance has its toll on both mother and fetus encouraging growth restriction. These factors promote ill health in the mother, thereby exacerbating poor maternal and fetal wellbeing.

The effect of education on improving the outcome of deliveries has been withered off by the depressed economy.^[12] Most families can no longer afford the cost of healthcare. A sick mother obviously will give birth to a sick baby. Our study did not show anything different since many more parturient women with tertiary education had low birth weight babies.

This study is in line with some others that have shown that poor Apgar score is a known sequelae of low birth weight deliveries.^[17] Apgar scores of less than 7 at 5 min need further medical evaluation.

Conclusion

Low birth weight delivery is still quite rife in our environment. The majority of these babies were intrauterine growth retarded. The prevalence occurred predominantly in the nulliparous and low parity parturient women and also in situations of multiple gestation, short interpregnancy intervals and hypertensive disorders of pregnancy.

Efforts harnessed towards improving attendance to antenatal care, and provision of effective family planning services can help in curbing the incidence.

Acknowledgment

We express immense gratitude to the nursing staff of the Department of Obstetrics and Gynecology as well as the staff of the Medical Records Department for their assistance.

References

1. Hema, K. R. , Johanson, R. Management of the growth-restricted fetus. *The Obstetrician & Gynaecologist*, 2000;2: 13–20.
2. Chan M. Low birth weight infants. In: Stanfield P, Brueton M, Parkin M, editors. *Diseases of children in Subtropics and Tropics*. 4thed. London: Edward Arnold; 1994. p. 208-20.
3. Owa JA, Al-dabbous I, Owoeye AA. Weight specific morbidity and mortality rates among LBW infants in two developing countries. *Niger J Paediatr* 2004;31:19-24.
4. Stoll BJ, Kliegman RM. Overview of morbidity and mortality. In: Behrman RE, Kliegman R, Jenson AB, editors. *Nelson Textbook of Pediatrics*. 17th ed. Pennsylvania: Elsevier; 2004. p. 520.
5. Vilar J, Belizan JM. The relative contribution of prematurity and fetal growth retardation to low birth weight in developing and developed countries. *Am J Obstet Gynecol* 1982;143:793-8.
6. Welbeck J, Biritwum RB, Mensah G. Factors affecting the survival of "at risk" newborn at Korle Bu Teaching Hospital, Accra, Ghana. *West Afr J Med* 2003;22:55-8.
7. Badshah S, Mason L, McKelvie K, Payne R, Lisboa PJ. Risk factors for low birth weight in the public hospitals at Peshawar, NWFP- Pakistan. *BMC Public Health* 2008;8:197.
8. Lawoyin TO, Onadeko MO, Asekun-Olarimoye EO. Neonatal mortality and perinatal risk factor in rural southeastern Nigeria: A community-based prospective study. *West Afr J Med* 2010;29:19-23.
9. Mbazor OJ, Umeora OU. Incidence and risk factors for low birth weight among term singletons at the University of Benin Teaching Hospital, Benin City, Nigeria. *Niger J Clin Pract* 2007;10:95-9.
10. Preacely N, Biya O, Gidado S, Ayanleke H, Kida M, Akhimien M, et al. Hospital-based mortality in federal capital territory hospitals-Nigeria, 2005-2008. *Pan Afr Med J* 2012;11:66.
11. Aremu O, Lawoko S, Dalal K. Neighbourhood socioeconomic disadvantage, individual wealth status and pattern of delivery care utilization in Nigeria: A multilevel discrete choice analysis. *Int J Womens Health* 2011;3:167-74.
12. Ikeako LC, Onah HE, Illoabachie GC. Influence of formal maternal education on the use of maternity services in Enugu, Nigeria. *J Obstet Gynaecol* 2006;26:30-4.
13. Sunday-Adeoye I, Twoney ED, Egwuatu V. A 20-year review of twin births in Mater Misericordiae Hospital, Afikpo South Eastern Nigeria. *Niger J Clin Pract* 2008;11:231-4.
14. Onyearugha CN, Ugboma HA. Twin births in the University of Port Harcourt teaching hospital, Port Harcourt, Nigeria. *J Hainan Med Univ* 2010;16:157-60.
15. Garbacia JA. Prematurity prevention: Who is at risk? *Clin Perinatol* 1982;19:275-89.
16. Ben HamidaNouaili E, Chaouachi S, Bensaïd A, Marrakchi Z. Determinants of neonatal mortality in a Tunisian population. *Tunis Med* 2010;88:42-5.
17. Ersdal HL, Mduma E, Svensen E, Perlman J. Birth asphyxia: A major cause of early neonatal mortality in a Tanzanian rural hospital. *Pediatrics* 2012;129:1238-43.

How to cite this article: ???

Source of Support: Nil, **Conflict of Interest:** None declared.

Announcement

Android App



Download
Android application

A free application to browse and search the journal's content is now available for Android based mobiles and devices. The application provides "Table of Contents" of the latest issues, which are stored on the device for future offline browsing. Internet connection is required to access the back issues and search facility. The application is compatible with all the versions of Android. The application can be downloaded from <https://market.android.com/details?id=comm.app.medknow>. For suggestions and comments do write back to us.