

Prevalence and Perinatal Outcome of Low Birth Weight Infants in the University of Uyo Teaching Hospital, Uyo, Nigeria

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ABSTRACT

Low birth weight (LBWs) deliveries constitute significantly to the disproportionately high neonatal and infant mortality rates in the developing world as well as mental, physical and neurological handicaps later in life. The objective of this study was to determine the prevalence and perinatal outcomes of low birth weight babies in the University of Uyo Teaching Hospital from January 2006 to December 2007. The incidence of low birth weight babies was 12.3%. This was higher among female babies 53.7%, preterm deliveries (62.1%) and nulliparous mothers (35.1%). There were statistically significant associations in the number of still births ($p < 0.0001$), caesarean sections rates ($p < 0.001$), perinatal admissions and deaths ($p < 0.001$) among these babies when compared with babies of normal weight. There was however a statistically significant better birth outcome among LBWs weighing above 1.5kg when compared to those = 1.5kg.

Keywords: Prevalence, Birth weight, Perinatal, Outcome

INTRODUCTION

Low birth weight (LBW) infants defined by the World Health Organization (WHO) as an infant weighing less than 2500 grams constitute a major health problem in the developing world, as they contribute significantly to the disproportionately high neonatal and infant mortality rates¹⁻⁵. Besides being prone to increased mortality, low birth weight babies also tend to experience greater morbidity in terms of mental, physical and neurological handicaps later in life as well as an increased risk of cardiovascular disease, hypertension and diabetes in adult life^{2,4,6-12}.

Foetal growth and birth weight are influenced by a variety of factors racial, social and economic among others, as well as specific medical conditions that may be present or may develop during pregnancy¹². The birth weight of the newborn has been described as the single most important determinant of the chances of the newborn to survive and to experience healthy growth and development¹².

There have been previous international reports and reports from other regions of Nigeria about the prevalence and outcome of low birth weight infants. However to the best knowledge of the authors, there has been no previous report

from this part of the country. The purpose of this study is therefore to determine the prevalence and perinatal outcomes of low birth weight babies at the University of Uyo Teaching Hospital.

MATERIALS AND METHODS

This retrospective study was carried out in the maternity/neonatal intensive care units of the University of Uyo Teaching Hospital, located in the outskirts of Uyo, the capital of Akwa Ibom State, in the South-South Zone of Nigeria. Data was obtained from the records of all low birth weight deliveries at the maternity unit of the Hospital from January 2006 to December 2007 and included maternal age, parity, gestational age at delivery and the foetal outcome. Data were also obtained from the neonatal intensive care unit of the same Hospital of all admissions and deaths within the same period. A comparison of the outcome of low birth weight infants was then made with those babies weighing more than 2,500grams.

Statistical analysis of data was done using the chi square (χ^2) and the student's T tests where appropriate. A P value < 0.05 was considered as statistically significant. Apgar score of less than 7 at 5 minutes was regarded as birth asphyxia.

RESULTS

During the period under review, there were 2,837 deliveries, 348(12.3%) of these were LBW babies and were born to 319 mothers.

Table I shows some biosocial variables of these mothers, the highest prevalence of LBW delivers occurred among mothers aged 25-29 years (42.8%), nulliparous mothers (35.1%) and

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booked women (71.6%). There was a slight female preponderance among these babies (53.7%) (M:F:1:1.2), majority of them (51.4%) were delivered by spontaneous vertex delivery, were singletons (80.7%) and were preterm (62.1%) (Table 2). Eighty-nine (25.6%) of these babies weighed less than 1.5kg.

During the period under review, there were 177 still births, LBW babies accounted for 73 (41.2%) of these, giving a still birth rate of 209.8/1000 births. This was statistically significant $P < 0.0001$. LBW babies accounted for only 133 (23.6%) of the 563 admissions to the neonatal intensive care unit but 21 (77.8%) of the neonatal deaths recorded during the same period. This was statistically significant ($\chi^2 = 16.610$, df=1, $P < 0.001$) (Table 3).

Table 4 shows the comparative birth outcomes of LBWs = 1.5kg and < 1.5kg. There were 35 (39.3%) still births among babies weighing < 1.5kg compared with 38 (14.7%) still births among LBWs = 1.5kg. This was statistically significant ($p < 0.001$). There were also statistically significant differences in birth asphyxia between the two groups, 57.4% of babies < 1.5kg had Apgar scores of < 7 at 5 minutes compare with 40.3% of babies = 1.5kg, ($p < 0.001$).

Table 1: Maternal Biosocial Factors

Age	All Deliveries (%)	LBWs (%)
= 19	211 (7.4)	30 (8.6)
20-24	484 (17.1)	91 (26.2)
25-29	1133 (39.9)	149 (42.8)
30-34	840 (29.6)	60 (17.2)
Not stated	169 (6)	18 (5.2)
PARITY		
0	641 (22.6)	122 (35.1)
1	737 (26)	86 (24.7)
2	550 (19.4)	59 (16.9)
3	375 (13.2)	35 (9.9)
4	202 (7.1)	17 (4.9)
=5	220 (7.8)	18 (5.2)
Not stated	112 (3.9)	11 (3.2)
BOOKING STATUS		
Booked	2361 (83.2)	249 (71.6)
Unbooked	476 (16.8)	99 (28.4)

Table 2: Sex Distribution, Mode of Delivery and Gestational Age of the LBW Babies n = 348

Variable	Number (%)
SEX	
Male	161 (46.3)
Female	187 (53.7)
BIRTH WEIGHT	
< 1.5kg	89 (25.6)
1.5-2.49kg	259 (74.4)
MODE OF DELIVERY	
Spontaneous Vertex Delivery	179 (51.4)
Caesarean Section	43 (12.1)
Assisted Breech Delivery	22 (6.3)
Vacuum Extraction	3 (0.9)
Laparotomy	1 (0.3)
GESTATIONAL AGE (WEEKS)	
< 28	38 (11.9)
28-30	48 (13.8)
31-33	42 (12.1)
34-36	88 (25.3)
37-40	62 (17.8)
> 40	9 (2.6)
Not sure	61 (17.5)

Table 3: Birth Outcome of LBW Babies

Variable	n=2,837 All deliveries (%)	n=348 LBW (%)	P Value
Foetal Condition at Birth			
Still Birth	177 (6.2)	73 (21)	$\chi^2 = 93.09$
Live Births	2660 (93.8)	275 (79)	$p < 0.0001$
Perinatal Outcome			
Admissions	563 (19.8)	133 (38.2)	$\chi^2 = 16.610$
Deaths	27 (0.95)	21 (6)	$P < 0.001$
Mode of delivery			
Spontaneous vaginal Delivery	1702 (60.1)	79 (51.4)	$\chi^2 = 20.793$
Caesarean Section	833 (29.4)	143 (41.1)	$P < 0.001$
* Others	302 (10.6)	26 (7.5)	

* Others include instrumental deliveries, assisted breech delivery, laparotomy.

Table 4: Comparison of Birth Outcome Between Babies =1.5kg And Those <1.5kg

Variable	n=259 =1.5kg	n=89 =1.5kg	P Value
Foetal Condition			
At Birth			
Still births	38(14.7)	35(39.3)	$\chi^2 = 24.29$
Live births	221(85.3)	54(60.7)	$p < 0.001$
Apgar Scores at 5 mins			
<7	89(40.3)	31(57.4)	$\chi^2 = 15.22$
>7	128(57.9)	18(33.3)	$p < 0.001$
Not stated	4 (1.8)	5(9.3)	

DISCUSSION

The incidence of LBWs in this study was 12.3% and was higher than 6.7% reported in Osogbo, Nigeria¹, comparable to the 12.64% reported in Enugu, Nigeria², but much lower than 21.3% reported among Hausa infants in Katsina also in Nigeria¹⁰. The wide disparity between these reports in the same country could be a reflection of the regional/cultural variations in birth weight even in the same country. Enugu and Uyo are located in the south-east and south-south of the country respectively, Osogbo in the south-west and Katsina located in the north-west of Nigeria. Furthermore the study in Katsina was restricted only to Hausa infants who are the major ethnic group found in that part of the country. This is further corroborated by an earlier study by Osuhor¹¹ who studied LBWs in Malumfashi which is close to Katsina in Northern Nigeria and reported an incidence of 20%.

Factors identified as having a direct causal impact on low birth weight, identified by Kramer in his meta-analysis of 895 publications included infants gender, social/ethnic origin, maternal height, parity, gestational age and malarial infection¹². Some of these associations were also reported in previous Nigerian studies^{2,10,11,13,14}.

A major deviation in this study however was the low prevalence of low birth weights among teenage mothers (4.6%) when compared with other Nigerian studies^{1,2,10-13} as majority of LBWs occurred among mothers aged 20-29 in this study. This may be due to the fact that most of the pregnant women in the study fall into this age range, but may also reflect a geographic/cultural variation, as a previous study of teenage

pregnancies in this Hospital had shown that majority of teenage mothers (85.0%) booked for and received antenatal care with its attendant benefits¹⁵. Multiple pregnancies have also been described as a major risk factor for LBW delivery^{2,10,16} and 19.3% of these LBWs resulted from multiple pregnancies. Preterm deliveries and intrauterine growth restriction of some twins are both important aetiological factors for the increased incidence of LBWs in multi foetal gestations¹⁷. Prematurity (62.1%) and nulliparity (35.1%) were however the main risk factors identified in the study.

This study shows that there were more adverse birth outcome among LBWs as there were increased caesarean section rates, birth asphyxia, still births and early neonatal deaths among the LBW babies when compared with babies of normal weight. However survival and morbidity among LBW infants is also weight related as there is a much better outcome among larger LBW babies (weighing 1500grams-2499 grams) when compared with very low birth weight babies (<1500grams and extreme low birth weight babies) (<1000 grams)^{5,18}. This observation was found in this study.

Advances in neonatal care have greatly contributed to the survival of VLBW infants in developed countries¹⁸⁻²¹. Thus all very LBW babies (<1500grams) should be offered a greater chance of survival by admission into the neonatal intensive care unit. It is currently the policy of this institution to admit all LBW babies weighing <1,800 grams into the neonatal intensive care unit.

Limitations of this study included poor record keeping, lack of control for some maternal, biological, social and cultural variables due to the retrospective nature of the study but it is the view of the authors that based on the objective of the study; the overall observations remain valid to a great extent.

In conclusion, birth weight is a major determinant of birth outcome. To reduce the prevalence of LBWs, we advocate the provision of antenatal care for all expectant mothers, identification, prevention and treatment of identified causes of preterm delivery and intra uterine growth instruction. Provision of neonatal intensive care facilities in developing countries will significantly reduce the morbidity and mortality among these infants²⁰.

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