

# Singleton Low Birth Weight Babies At A Tertiary Hospital In Enugu, South East Nigeria

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## Citation

E EC, O HE, O IO, A JC. *Singleton Low Birth Weight Babies At A Tertiary Hospital In Enugu, South East Nigeria*. The Internet Journal of Gynecology and Obstetrics. 2009 Volume 14 Number 1.

## Abstract

Background - Low birth weight (LBW) babies are significantly at risk of death, contributing to the high perinatal morbidity and mortality in low resource countries. Objective- To determine the incidence of LBW babies in our hospital, identify predisposing factors with a view to proffering solution. Method- A one year prospective study of Singleton LBW babies delivered at Enugu State University Teaching Hospital (ESUTH), Parklane, Enugu from 1<sup>st</sup> November 2007 to 31<sup>st</sup> October 2008 was carried out. Result- There were 168 LBW babies and 1630 live births giving an incidence of 10.76%. Of these, 116 (69.05%) were preterm and 52 (30.95%) were term, small for gestational age. The mean birth weight was 3.13kg. Six (3.57%) of the mothers of LBW babies were teenagers. Nulliparity, illiteracy, lack of antenatal care and preterm delivery significantly increased the incidence of LBW (p-value<0.05) while maternal weight and height at booking, and fetal sex did not (p-value>0.05). Identified predisposing factors included hypertensive disease in pregnancy, malaria and anaemia in pregnancy, preterm prelabour rupture of membranes and antepartum haemorrhage.

## INTRODUCTION

Low birth weight babies are infants who weigh less than 2500gm at birth [1]. Birth weight is a key indicator of the health of infants at birth as well as of the mother's reproductive health [2]. Several variables contribute ultimately to the weight of a new born baby. The maximum growth potential for a particular fetus, which is genetically determined, is important as also is the amount of nutrient which is transferred from the mother through the placenta to the fetus for growth and energy requirement. Fetal growth in the presence of a good supply of nutrient and energy across a normal placenta may be the result of genetic factor [3]. It is this supposition that probably accounts for some of the varying racial and ethnic differences in birth weight, and for the smaller size of females at birth compared to males [3].

It is known that fetal under-nutrition, which is common in developing countries where low birth weight is common, is an important cause of intrauterine growth restriction resulting in low birth weight [2].

Babies of low birth weight are more likely to die than those of normal birth weights. It is claimed that life depends on birth weight [2]. Studies have shown that the smaller the birth weight, the higher the mortality rate. Approximately

25% of all infants weighing less than 1500grams died by age 1, compared to 2% for infants weighing 1500 – 2499 grams and 0.3% for infants weighing 2500grams or more [2, 4]. Apart from the increased risk of death in LBW babies, there is also an associated increased risk of morbidity during childhood and adulthood. LBW and VLBW are associated with long term disabilities, such as cerebral palsy, autism, mental impairment, vision and hearing impairments, and other developmental disabilities [5]. Birth weight is related to the chance of survival of the child as well as the health of the child.

In most developing countries, the neonatal mortality rate, infant mortality rate and under-5 mortality rate are quite high. In Nigeria, it stands at 48, 100 and 200 per 1000 live births respectively. About one million Nigeria children die each year before their fifth birthday. This is unacceptably high as Nigeria's population is just 2% of the world's population but contributes 10% of global under-5 deaths [6]. This emphasizes the need for developing countries to double their efforts in child health in order to achieve millennium development goals (MDG) 4 by 2015

The aim of the study was to determine the incidence of low birth weight in our institution, identify its predisposing

factors in other to proffer solution. No similar study has ever been done in the institution before now. This information is important as we seek ways of improving the birth weight of babies and reducing perinatal and neonatal deaths in our sub region.

**METHODOLOGY**

A one-year descriptive study of low birth weight singleton babies delivered at Enugu State University of Science & Technology Teaching hospital, (ESUTH) Parklane Enugu from 1<sup>st</sup> November, 2007 to 31<sup>st</sup> October, 2008 was carried out. Approval for the study was obtained from the hospital ethical committee.

ESUTH is located in Enugu, the capital of Enugu State in the South East geopolitical zone of Nigeria. It existed as a General hospital until November 2003 when it was upgraded to a Specialist hospital, and finally to a Teaching hospital in June 2006. It serves an estimated six million people of Enugu state as well as neighboring states of Nigeria.

The mothers of these babies were interviewed and relevant information extracted using a proforma on a daily basis. The result was analysed using Epi- info version 3.3.2.

**RESULTS**

There were 168 LBW babies and 1630 live births within the one- year study period, giving an incidence of 10.31%. The average weight of babies born at the institution within the one year period was 3.13kg.

Low birth weight occurred more at the extremes of the reproductive age- maternal age of 19 years and below and 40 years and above. Six (3.57%) of the mothers were teenagers, but they had the highest incidence of low birth weight babies (24%) as shown in Table 1.

Nulliparous women were significantly predisposed to LBW (p- value= 0.004) as well as women who had no antenatal care (18.18%) p-value<0.01) Table 1. Maternal weight (p-value=0.66) and height at booking (p-value =0.69) did not significantly affect the incidence of LBW, although none occurred at maternal height and weight greater than 1.74m and 99kg respectively.

Female gender as well as booking for antenatal care during the third trimester was associated with a higher incidence of low birth weight babies although not statistically significant (p-value>0.05).

Preterm delivery accounted for 116(69.05%) of LBW babies

while 52(30.95%) of the LBW babies were small for gestational age babies delivered at term.

Hypertensive disease in pregnancy accounted for 42(22.46%) LBW babies, followed by malaria in pregnancy 30 (16.04%), anemia in pregnancy 25 (13.37%), antepartum haemorrhage (APH) 10 (5.35%), preterm prelabour rupture of membrane (PPROM) 6 (2.86%), HIV/AIDS 4(1.91%) . The probable cause of low birth weight could not be ascertained in 70 (37.43%) of the LBW babies studied.

**Figure 1**

Table I: Distribution of LBW babies based selected socio-demographic characteristics of the mothers

Variables	No. of LBW (168)	Total No of Women (1630)	Incidence (%)
<b>Age</b>			
19	6(3.57%)	25 (1.53%)	24
20-24	28(16.67%)	286(17.55%)	9.78
25-29	61(36.31%)	609(37.38%)	10.02
30-34	38(22.62%)	448(27.50%)	8.40
35-39	25(14.88%)	222(13.61%)	11.26
40 & above	10(5.95%)	40(2.44%)	25
<b>(p-Value=0.006)</b>			
<b>Parity</b>			
1	77(45.83%)	523(32.09%)	14.72
2	36(21.43%)	417(25.58%)	8.63
3	12(7.14%)	172(10.55%)	6.98
4	10(5.95%)	115(7.06%)	8.70
≥5	14(8.33%)	150(9.20%)	9.30
<b>(p-Value=0.004)</b>			
<b>Booking status</b>			
ESUTH	79(47.02%)	952(58.40%)	8.30
Elsewhere	35(20.83%)	386(23.68%)	9.07
Unbooked	54(32.14%)	292(17.97%)	18.49
<b>(p-Value=&lt;0.01)</b>			
<b>Educational level</b>			
None	16(9.52%)	88(5.40%)	18.18
Primary	82(48.81%)	493(30.25%)	16.63
Secondary	44(26.19%)	733(44.97%)	6.00
Tertiary	25(14.88%)	317(19.45%)	7.89
<b>(p-Value=&lt;0.01)</b>			

**Figure 2**

Table II: The distribution of low birth weight (LBW) babies based on the sex of the baby

Sex	No of LBW babies	No of babies	Incidence (%)
Male	73	778	9.38
Female	95	852	11.15
Total	168	1630	10.31
<b>p-value=0.24</b>			

**Figure 3**

Table III: Probable cause of LBW in the study population

Probable cause of LBW	No of LBW babies n(%)	% of total
Hypertensive disease	42	22.46
Malaria	30	16.04
Anaemia in pregnancy	25	13.37
APH	10	5.35
PPROM	6	3.21
HIV/AIDS	4	2.14
Unknown	70	37.43

**DISCUSSION**

The incidence of LBW was 10.31%, which was lower than the national average of 14% [1] but higher than 8.1% reported in Benin, Nigeria [7]. It is also lower than the national average of other developing countries like Ghana (16%), Togo (18%), and Sierra Leone (23%). This is however higher than that from developed world, 5%, 6%, 8%, from Norway, Canada, and United Kingdom [1].

The higher incidence of LBW babies in developing countries, compared to developed countries is a reflection of poor maternal nutrition, malaria and anaemia in pregnancy which are prevalent in these developing countries of which Nigeria is one. A poorly fed mother does not gain weight satisfactorily in pregnancy and failure to gain an average 0.4- 0.5 kg per week in the last two trimesters can be taken as indicative of poor intrauterine fetal growth and resultant low

Pregnancy in women below 20 years (teenage pregnancy) and above 40 years (Table I) had significantly higher incidence of LBW, as has also been reported in several studies [8, 9, 10]. Several studies have demonstrated an increase in pregnancy complication associated with teenage pregnancy. This includes anaemia, preterm labor, hypertensive disorders of pregnancy, low birth weight babies, and cephalopelvic disproportion [11,12,14,15]. Medical disorders in pregnancy e.g. diabetes mellitus, hypertension are commoner in advanced maternal age, hence predisposing the baby towards low birth weight.

Primigravida has significantly higher incidence of LBW. Several studies have shown that primigravidae have an increased incidence of LBW [8,11]. This may be attributed to the higher incidence of malaria in pregnancy and pre-eclampsia/ eclampsia which are predisposing factors for LBW.

Women who had no antenatal care were found to have a

significantly higher incidence of LBW (18.49%). This is similar to results from other centres both locally and internationally [8,16,17,18]. In a study at a Mission hospital in Benin City, Nigeria, the leading maternal factor associated with delivery of low birth weight infant was absent or inadequate antenatal care [7]. In a similar study at Dhaka, Bangladesh, birth weight had a positive correlation with the frequency of antenatal care visit. It showed that 3 antenatal care visits were quite effective in reducing the proportion of low birth weight infants [17]. Anti-malarial drugs and prophylaxis, as well as iron and folic acid supplementation that are usually given during antenatal care in developing countries has been shown to reduce the incidence of LBW by 16% [11]. Poverty is a militating factor against the utilization of the few available health services in developing countries. A recent demographic and health surveys from 24 countries in Africa showed that the majority of women (57%) expressed that financial inability was the main reason for not accessing care at a health facility and not a lack of knowledge [18].

Illiteracy and poor educational background significantly affected the incidence of low birth weight (p-value<0.01) as shown in similar studies [2, 16]. In a study in Tanzania, Mothers without formal education were four times likely to give birth to LBW neonates than those who had attained higher education [19]. The illiterate or poorly educated are more likely not to receive antenatal care than the educated. In earlier study in Zaria, Nigeria, women who had no formal education and had no antenatal care had higher incidence of LBW babies, perinatal and maternal mortality [2].

The gestational age at delivery significantly determined the incidence of LBW. LBW was strongly associated with gestational age below 37 weeks as has been report in several studies [19].

Hypertensive diseases in pregnancy (hypertension, preclampsia, eclampsia complex) was the leading cause of LBW (22.46%) in this study, similar to report from Northern Tanzania (46.67%) [21]. Other causes were malaria in pregnancy, anaemia in pregnancy, APH, PPRM, HIV and AIDS. These disease conditions were found to be associated with LBW in various proportions in similar studies [8, 19, 20, 21]. About 70 (37.43%) of the low birth weight baby had unknown etiology.

In order to reduce the prevalence of LBW with its attendant morbidity and mortality, the importance of satisfactory pre-conception and prenatal care cannot be over emphasized.

Contraception should be made available, affordable and easily accessible for the prevention of unwanted pregnancy especially to the adolescent. In many center in developing countries, like ours, contraceptive devises are available but not accessible to the unmarried adolescent girl.

In conclusion, LBW babies are common in our hospital. Health promotion and female education, proper antenatal care, early diagnosis and prompt treatment of identifiable medical disorders of pregnancy will significantly reduce the incidence of LBW babies, thus a good strategy towards achieving MDG 4.

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