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Factors Associated with Low Birth Weight Babies Delivered in Comprehensive Health Centre, Gindiri, North Central Nigeria

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ABSTRACT
Introduction *Low Birth Weight is one of the most important public health concerns worldwide and is still the leading cause of prenatal and neonatal deaths. Despite the primary health care revolution and its emphasis on Maternal and Child health, Low Birth Weight remains a public health challenge. This study aims to assess the determinants of low birth weight among infants delivered in a rural hospital in Nigeria*
Methodology: *The study was conducted in Comprehensive Health Centre, Gindiri. Secondary data from 680 records of delivery in the health facility in the year 2013 was used to assess the determinants of low birth weight babies born in the health centre. Ethical clearance was obtained from the JUTH Review Board and data obtained was anonymised in order to ensure the confidentiality of patients.*
Findings: *A total of 680 women analysed had mean age was 24.88 ± 5.77 years. Majority of the women (92.2%) were between the ages of 15 and 34 years, 665 (97.8%) were married while 399 (58.7%) had no formal education. Most women (69.7%) who delivered in the health facility were full time house wives and 83.8% of mothers stayed close to the health facility. Summary statistics showed that 82.2% booked for antenatal care while 17.8% were not booked and thus did not visit the hospital for ANC; 80.7% of the women were booked within the facility while 1.5% booked in other health facilities.*
The mean weight of babies was 3.09 ± 0.45kg and5.4% of the babies had low birth weight compared to 94.6% who had at least normal birth weights at delivery.
Mother's occupation, p= 0.015; booking status, p=0.005; place of booking, p=0.012; and number of ANC visits, p=0.018 were found to be significantly associated with having low birth weight babies.
Conclusion: *The prevalence of LBW found in this study is low and the study revealed the protective effects of housewife status and maternal education on low birth weight.*
Keywords: *Low Birth Weight, Babies, Delivery.*

INTRODUCTION

One of the major goals in 'A World Fit for Children', the Declaration and Plan of Action adopted by the United Nations General Assembly Special Session on Children in 2002 was to reduce the incidence of low birth weight by at least one third between 2000 and 2010.[1] The reduction of low birth weight also forms an important

contribution to the third goal and second target of the 2030 Agenda for Sustainable Development, which is to ensure health and well-being for all, at every stage of life and to end, by 2030, preventable deaths of newborns and children under 5 years of age.[2] Birth weight is considered the most important index of neonates' growth and the most important determinant of infants' mortality.[3]A baby's weight at birth is a strong indicator of maternal and newborn health and nutrition. Being undernourished in the womb increases the risk of death in the early months and years of a child's life. Those who survive tend to have impaired immune function and increased risk of disease; they are likely to remain undernourished, with reduced muscle strength, cognitive abilities and intelligence quotient (IQ) throughout their lives. As adults, they suffer a higher incidence of diabetes and heart disease.[4]

Low birth weight has been defined by the World Health Organization (WHO) as weight at birth of less than 2,500 grams (5.5 pounds). It is an indirect measure of the intrauterine environment and the nutritional status of the mother during pregnancy.[1,5] This is based on epidemiological observations that infants weighing less than 2,500 grams are approximately 20 times more likely to die than heavier babies. More common in developing regions with lower socioeconomic status and poorer nutrition, a birth weight below 2,500 grams contributes to a range of poor health outcomes.[1]

In 2013, nearly 22 million newborns—an estimated 16% of all babies born globally had low birthweights.[4] Between 2009 to 2013, about 13 million neonates in Sub-Saharan Africa were estimated to have low birth weight. In Nigeria, 11 million babies were born with low birth weight in 2011. This was collaborated by findings from the 2013 Nigeria Demographic and Health Survey (NDHS), revealing a prevalence of LBW of 7.3%.[4,6] Similarly, findings from Plateau state in 2003 showed a prevalence of LBW of 12.7%.[7,8]

There are numerous factors associated with and contributing to the incidence of LBW babies. Maternal factors such as younger and older ages at delivery, low socio-economic status of mother, residence in a rural setting, illiteracy and smoking while pregnant. Other factors include history of drugs such as malaria prophylaxis taken during pregnancy, maternal height, pre-pregnancy body mass index (BMI), weight gain ≤4 kg during pregnancy, parity, birth interval, multiple gestation, the experience of any physical violence, previous history of LBW baby, and the lack of skilled antenatal care or late antenatal registration. Pregnant mothers who attended less than four ANC visits double their risk of delivering LBW babies compared to those visiting four or more times. Also, studies found that the prevalence of LBW was high, up to 57% and 61.8%, among mothers who did not receive any ANC. Paternal factors such as level of education, age, and employment were also significantly linked to the incidence of LBW.[6, 8-11]

LBW is one of the most important public health concerns worldwide and is still the leading cause of prenatal and neonatal deaths.[6] Despite the primary health care revolution and its emphasis on Maternal and Child health, LBW remains a public health challenge. This study therefore, aims to assess the determinants of low neonatal birth weight in a rural setting in Nigeria.

METHODS

Study area

The study was carried out in the Jos University Teaching Hospital (JUTH) Comprehensive Health Centre in Gindiri, located in Mangu Local Government Area (LGA) of Plateau state. It is located at an elevation of 1,008 meters above sea level; with its geographical coordinates being 9° 36' 0" North and 9° 14' 0" East. It has a population of 139,494 and is 98.2 kilometres (km)by the driving route and 50.7 km (airline or direct route) from the state capital, Jos.[12,13,14]

The health facility is staffed with doctors from diverse specialties of medicine, nurses and other health professionals like the Community Health Officers and junior/ senior Community Health Extension Workers who render antenatal, delivery and post-natal care services. The antenatal clinic

is run twice a week. New clients are booked and attended to on Mondays while returning patients are followed up on Wednesdays. The health facility attends to both booked and unbooked pregnant women in Gindiri town and surrounding villages.

Study design

This was a retrospective study through the use of secondary analysis of available records of delivery in the health facility in the year 2013. The determinants of low birth weight babies born in the comprehensive health centre were assessed.

Sample size and sampling criteria

The sample size was 680 and included women who delivered in the health facility between 1st January and 31st December 2013, whose antenatal and delivery records were available in the health facility register. Women whose delivery records are incomplete (especially when the outcome variables are missing) were excluded. Likewise, women with multiple gestation, preterm and post term deliveries were excluded from the study.

Study instrument

A data extraction form was used to extract relevant information from the register. The data was then entered into a spread sheet in Microsoft excel and cleaned.

Statistical analysis

Secondary data analysis was done, using the IBM Statistical Package for the Social Sciences (SPSS) version 21.

Prior to analysis, the age of the mothers was re-coded from discrete, quantitative variables to the ordinal variables as 15-24, 25-34, 35-44 and >44 years. Total number of antenatal visits by booked and unbooked women was recorded from discrete to ordinal variables as none, inadequate and adequate visits according to WHO criteria.[15,16] Distance to health facility was re-coded from being a continuous variable into a binary variable as near and far, also based on WHO criteria.[17] Mother's parity was recorded from discrete variable into categorical variable as primiparous, multiparous and grand multiparous.[18] The haematocrit level was re-coded as anaemia (PCV less than 33%) and normal Haematocrit (PCV ≥ 33%) according to WHO criteria,[19] also the height of the mothers was re-coded as normal stature (155cm and above) and short stature (154cm and below).[17,20] The outcome variable, birth weight, was transformed from continuous variable to a binary variable using 2.5kg as the cut-off point. Babies weighing < 2.5kg at birth were coded as low birth weight while those that weight ≥ 2.5 kg were coded as normal birth weight and above babies.[1]

The background characteristics of the mothers were assessed and presented as simple frequency tables. Chi squared test was then used to test for association between birth weight and maternal age, marital status, level of education, occupation, distance to the health facility, booking status, place of booking, number of ANC visits, parity, haematocrit level and height of the mothers. Subsequently, Univariate Binary logistic regression was used to determine the individual relationship between low birth weight and occupation, booking status, place of booking and number of ANC visits (which were all found to be significantly associated). Finally, multivariate logistics regression was used to assess the relationship between the factors found to be significantly associated with low birth weight at the univariate level. A p-value of ≤ 0.05 was considered significant.

Ethical consideration

Even though there was no direct contact with patients, ethical clearance was obtained from the JUTH Review Board. Approval was also sought from the management of Comprehensive Health Centre, Gindiri and data obtained was anonymised in order to ensure the confidentiality of patients.

FINDINGS

Socio-demographic characteristics of participants

Table I showed the baseline characteristics of the mothers and their babies. The mean weight of babies in kilograms (kg) was 3.09 ± 0.45, ranging from 1.3 to 5.3 kg. A total of 680 women with complete data in the antenatal and delivery records of the health facility were analysed in this study and their mean age was 24.88 ± 5.77 years. Majority of the women (92.2%) were between the ages of 15 and 34, with 16% (109), 12.4% (84) and 10.9% (74) of the women being of ages 20, 25 and 30. Most of them, 665 (97.8%) were married while 15 (2.2%) were single. 399 (58.7%) had no formal education, 65 (9.6%) had primary education, and 129 (19.0%) had secondary education, while 87 (12.8%) had tertiary education. Most women (69.7%) who delivered in the health facility were full time house wives, while those who worked were mainly into petty trading/small-scale business (4.0%), tailoring (5.4%), teaching (4.9%) and civil service (2.6%). 11.8% were students, while 1.6% were into other vocations like farming, knitting and evangelism.

83.8% of mothers stayed close to the health facility, while 16.2% were domiciled far from the health facility. Summary statistics showed that 82.2% booked for antenatal care while 17.8% were not booked and thus did not visit the hospital for ANC; 80.7% of the women were booked within the facility while 1.5% booked in other health facilities. Subsequently, 36.0% had inadequate ANC visits while 46.2% had adequate ANC visits to the health facility. With respect to the parity of the women, 36.9% of the women where primiparous, 44.1% where multiparous while 19.0% where grandmultiparous. Assessment of the women's packed cell volume revealed that 15.1% of them where anaemic while 84.9% had a normal haematocrit level. 556 (81.8%) of the women were of normal stature (155cm and above), while 124 (18.2%) of them were of short stature (154cm and below).

Analysis of the outcome variable showed that 5.4% of the babies had low birth weight compared to 94.6% who had at least normal birth weights at delivery.

Occupation of the women and birth weight of babies

While 474 (70%) of the women were Housewives about 25 (5.3%) of them had low birth weight babies and 449 (94.7%) of them had babies with at least normal birth weights. 3 (11.1%) of the businesswomen/traders had low birth weight babies and 24 (88.9%) of them had babies with at least normal birth weights. 3 (8.1%) of the women who were tailors had low birth weight babies while 34 (91.9%) of them had babies with at least normal birth weights. 3 (3.8%) of the women who were students had babies with low birth weights while 77 (96.3%) of them had babies with normal and above birth weights. None of the women who were civil servants delivered low birth weight babies while all the 18 of them had babies with normal and above birth weights. Of the women in "other" professions like farming, knitting and evangelism 3 (27.3%) of them delivered babies with low birth weights and 8 (72.7%) of them had babies with at least normal birth weights. There was a statistically significant association between occupation of the women and their baby's birth weight; p= 0.015 (table II).

Booking status of the women and birth weight of the babies

82.2% of the women booked for antenatal care while 17.8% were not booked and thus did not visit the hospital for ANC. 24 (4.3%) of the booked women had low birth weight babies while 535 (95.7%) of them had babies with at least normal birth weights. Of the unbooked women, 13 (10.7%) of them had low birth weight babies and 108 (89.3%) of them had babies with at least normal birth weights. There was a statistically significant association between booking status of mothers and their baby's birth weight; p<0.005 (table II).

Booking location of women and birth weight of the babies

80.7% of the women were booked within the facility while 1.5% booked in other health facilities. Of those booked within the facility 22 (4.0%) of them had low birth weight babies while 527 (96.0%) of them had babies with at least normal birth weights. 2 (20.0%) of those who booked outside the facility prior to coming for delivery had low birth weight babies while 8 (80.0%) of them had babies with at least normal birth weights. There was a statistically significant association between booking location of women and their baby's birth weight; p<0.002 (table II).

Number of ANC visits and birth weight of the babies

17.8% of the women did not have any form of ANC,36.0% had inadequate ANC visits while 46.2% had adequate ANC visits to health facilities. Of those who did not visit the hospital for ANC, 13 (10.7%) of them had low birth weight babies while 108 (89.3%) had babies with at least normal birth weights. Of those who had inadequate (1-3) ANC visits, 11 (4.5%) had low birth weight babies while 234 (95.5%) had babies with at least normal birth weights. 13 (4.1%) of the women with adequate (4 or more) visits had low birth weight babies while 301 (95.9%) of them had babies with at least normal birth weights. There was a statistically significant association between number of ANC visits and the birth weight of the babies; p<0.018 (table II).

PREDICTORS OF LOW BIRTH WEIGHT

This was assessed using univariate (binary) and multivariate (multiple) logistics regression.

UNIVARIATE LOGISTICS REGRESSION

At univariate level (table III), each individual factor was analysed singly; consequently, mother's occupation (being a housewifep= 0.007, OR=0.148, 95%CI=0.037 to 0.594 or student: p= 0.012, OR=0.104, 95%CI=0.018 to 0.603); booking status (being booked: p=0.006, OR=0.373, 95%CI=0.184 to 0.755); place of booking (being booked within the health facility: p=0.029, OR=0.167, 95%CI=0.033 to 0.833) and number of ANC visits (not visiting the health facility at all: p=0.012, OR=2.787, 95%CI=1.253 to 6.200) were found to be significantly associated with having low birth weight babies.

MULTIVARIATE LOGISTICS REGRESS-ION

All the variables found to be significantly associated at univariate level (mother's occupation, booking status, place of booking and number of ANC visits) were included in the multivariate analysis (table IV) in order to interact together and control for confounding variables.

Occupation

Being a Housewife was significantly associated with having a low birth weight baby (p= 0.005, OR=0.130, 95%CI=0.031 to 0.537). This suggests that the odds of housewives having babies with low birth weights was 0.130 times the odds of women in "other" occupations; hence being a housewife is protective from having a low birth weight baby.

Also, being a Student was significantly associated with having a low birth weight baby (p=0.011, OR=0.099, 95%CI=0.017 to 0.592). This implies that a mother who is a student has odds 0.104 times those of a woman in "other" occupations to have a baby with low birth weight; i.e. being a student is protective from having a low birth weight baby compared to those in "other" occupations.

Place of booking

Place of booking was significantly associated with having a low birth weight babies (p=0. 0.016, OR=0.133, 95%CI=0.026 to 0.690). This suggests that women booked within the health facility have odds 0.133 times those booked outside the health facilities of having a low birth weight baby; i.e. booking within JUTH CHC, Gindiriis protective against having a LBW baby.

Table 1: Background Characteristics of Mothers and Babies Delivered in the Health Facility

Mean weight of babies (kg)	Range of babies' weight
3.09 ± 0.45	1.3 – 5.3
Babies' birth weight	
Normal birth weight and above (2.5kg and above)	643 (94.6%)
Low birth weight (less than 2.5kg)	37 (5.4%)
Maternal variables	Number (Percentage) of participants (N=680)
Age (years)	24.89 ± 5.77
Marital Status	
Married	665 (97.8%)
Single	15 (2.2%)
Educational status	
None	399 (58.7%)
Primary education	65 (9.6%)
Secondary education	129 (19.0%)
Tertiary education	87 (12.8%)
Occupation	
Housewife	474 (69.7%)
Businesswoman/Trader	27 (4.0%)
Tailor	37 (5.4%)
Student	80 (11.8%)
Teacher	33 (4.9%)
Civil Servant	18 (2.6%)
Others	11 (1.6%)
Distance to Health Facility	
Near	570 (83.8%)
Far	110 (16.2%)
Booking Status	
Booked	559 (82.2%)
Not booked	121 (17.8%)
Place of Booking	
Not booked	121 (17.8%)
Booked within the facility	549 (80.7%)
Booked outside the facility	10 (1.5%)
Number of ANC visits	
No visit	121 (17.8%)
Inadequate (1-3 visits)	245 (36.0%)
Adequate (4 or more visits)	314 (46.2%)
Parity	
Primipara	251 (36.9%)
Multipara	300 (44.1%)
Grandmultipara	129 (19.0%)
Haematocrit level	
Anaemia (PCV less than 33%)	103 (15.1%)
Normal Haematocrit (PCV 33% and above)	577 (84.9%)
Maternal height	
Normal stature (155cm and above)	556 (81.8%)
Short stature (154cm and below)	124 (18.2%)
Birth weight	
Normal birth weight and above (2.5kg and above)	643 (94.6%)
Low birth weight (less than 2.5kg)	37 (5.4%)

Table 2: Association Between Maternal Demographic Characteristics and Baby's Birth Weight

Variables	Low birth weight	Normal weight and overweight babies	Statistic (x^2)	P Value
Age (years)			2.418	0.490
15-24 years	22 (6.6%)	312 (93.4%)		
25-34 years	14 (4.8%)	279 (95.2%)		
35-44 years	1 (2.0%)	50 (98.0%)		
45 years and above	0 (0.0%)	2 (100.0%)		
Marital Status			0.883	0.347
Single	0 (0.0%)	15 (100%)		
Married	37 (5.6%)	628 (94.4%)		
Educational status			1.148	0.766
None	24 (6.0%)	375 (94.0%)		
Primary education	4 (6.2%)	61 (93.8%)		
Secondary education	6 (4.7%)	123 (95.3%)		
Tertiary education	3 (3.4%)	84 (96.6%)		
Occupation			15.793	0.015
Housewife	25 (5.3%)	449 (94.7%)		
Businesswoman/Trader	3 (11.1%)	24 (88.9%)		
Tailor	3 (8.1%)	34 (91.9%)		
Student	3 (3.8%)	77 (96.3%)		
Teacher	0 (0.0%)	33 (100.0%)		
Civil Servant	0 (0.0%)	18 (100.0%)		
Others	3 (27.3%)	8 (72.7%)		
Distance to Health Facility			0.000	0.995
Near (less than 5km)	31 (5.4%)	539 (94.6%)		
Far (5km or more)	6 (5.5%)	104 (94.5%)		
Booking Status			8.044	0.005
Booked	24 (4.3%)	535 (95.7%)		
Not booked	13 (10.7%)	108 (89.3%)		
Place of Booking			12.926	0.002
Booked within the facility	22 (4.0%)	527 (96.0%)		
Booked outside the facility	2 (20.0%)	8 (80.0%)		
Number of ANC visits			8.077	0.018
No visit	13 (10.7%)	108 (89.3%)		
Inadequate (1-3 visits)	11 (4.5%)	234 (95.5%)		
Adequate (4 or more visits)	13 (4.1%)	301 (95.9%)		
Parity			1.593	0.451
Primipara	17 (6.8%)	234 (93.2%)		
Multipara	15 (5.0%)	285 (95.0%)		
Grandmultipara	5 (3.9%)	124 (96.1%)		
Haematocrit level			0.572	0.449
Anaemia (PCV less than 33%)	4 (3.9%)	99 (96.1%)		
Normal Haematocrit (PCV 33% and above)	33 (5.7%)	544 (94.3%)		
Maternal height			3.467	0.063
Normal stature (155cm and above)	26 (4.7%)	530 (95.3%)		
Short stature (154cm and below)	11 (8.9%)	113 (91.1%)		

Table 3: Univariate logistic regression of factors associated with baby's birth weight

Variables	Low birth weight	Normal weight and overweight babies	P Value	Odds Ratio (Exp B)	95% CI Lower	95% CI Upper
Age (years)						
15-24 years	22 (6.6%)	312 (93.4%)	0.999	113913126.138	0.0	
25-34 years	14 (4.8%)	279 (95.2%)	0.999	81064277.447	0.0	
35-44 years	1 (2.0%)	50 (98.0%)	1.000	32309904.868	0.0	
45 years and above	0 (0.0%)	2 (100.0%)	0.543	Reference		
Marital Status						
Single	0 (0.0%)	15 (100%)	0.999	0.0	0.0	
Married	37 (5.6%)	628 (94.4%)	Reference			
Educational status						
None	24 (6.0%)	375 (94.0%)	0.350	1.792	0.527	6.090
Primary education	4 (6.2%)	61 (93.8%)	0.437	1.836	0.396	8.503
Secondary education	6 (4.7%)	123 (95.3%)	0.665	1.366	0.332	5.614
Tertiary education	3 (3.4%)	84 (96.6%)	0.771	Reference		
Occupation						
Housewife	25 (5.3%)	449 (94.7%)	0.007	0.148	0.037	0.594
Businesswoman/Trader	3 (11.1%)	24 (88.9%)	0.229	0.333	0.056	1.995
Tailor	3 (8.1%)	34 (91.9%)	0.110	0.235	0.040	1.390
Student	3 (3.8%)	77 (96.3%)	0.012	0.104	0.018	0.603
Teacher	0 (0.0%)	33 (100.0%)	0.998	0.000	0.000	
Civil Servant	0 (0.0%)	18 (100.0%)	0.998	0.000	0.000	
Others	3 (27.3%)	8 (72.7%)	0.099	Reference		
Distance to Health Facility						
Near (less than 5km)	31 (5.4%)	539 (94.6%)	0.995	0.997	0.406	2.450
Far (5km or more)	6 (5.5%)	104 (94.5%)	Reference			
Booking Status						
Booked	24 (4.3%)	535 (95.7%)	0.006	0.373	0.184	0.755
Not booked	13 (10.7%)	108 (89.3%)	Reference			
Place of Booking						
Booked within the facility	22 (4.0%)	527 (96.0%)	0.029	0.167	0.033	0.833
Booked outside the facility	2 (20.0%)	8 (80.0%)				
Number of ANC visits						
No visit	13 (10.7%)	108 (89.3%)	0.012	2.787	1.253	6.200
Inadequate (1-3 visits)	11 (4.5%)	234 (95.5%)	0.840	1.088	0.479	2.474
Adequate (4 or more visits)	13 (4.1%)	301 (95.9%)	0.023	Reference		
Parity						
Primipara	17 (6.8%)	234 (93.2%)	0.601	0.258	1.802	0.649
Multipara	15 (5.0%)	285 (95.0%)	0.959	0.614	1.305	0.464
Grandmultipara	5 (3.9%)	124 (96.1%)	0.457	Reference		
Haematocrit level						
Anaemia (PCV less than 33%)	4 (3.9%)	99 (96.1%)	0.452	0.666	0.231	1.922
Normal Haematocrit (PCV 33% and above)	33 (5.7%)	544 (94.3%)	Reference			
Maternal height						
Normal stature (155cm and above)	26 (4.7%)	530 (95.3%)	0.067	0.504	0.242	1.050
Short stature (154cm and below)	11 (8.9%)	113 (91.1%)	Reference			

Table 4: Multivariate logistic regression of factors associated with baby's birth weight

Variables	Low birth weight	Normal weight and overweight babies	P Value	Odds Ratio (Exp B)	95% CI Lower	95% CI Upper
Occupation						
Housewife	25 (5.3%)	449 (94.7%)	0.005	0.130	0.031	0.537
Businesswoman/Trader	3 (11.1%)	24 (88.9%)	0.203	0.307	0.050	1.892
Tailor	3 (8.1%)	34 (91.9%)	0.124	0.242	0.040	1.475
Student	3 (3.8%)	77 (96.3%)	0.011	0.099	0.017	0.592
Teacher	0 (0.0%)	33 (100.0%)	0.998	0.000	0.000	
Civil Servant	0 (0.0%)	18 (100.0%)	0.998	0.000	0.000	
Others	3 (27.3%)	8 (72.7%)	0.119	Reference		
Booking Status						
Booked	24 (4.3%)	535 (95.7%)	0.618	4.608	0.011	1853.200
Not booked	13 (10.7%)	108 (89.3%)	Reference			
Place of Booking						
Booked within the facility	22 (4.0%)	527 (96.0%)	0.016	0.133	0.026	0.690
Booked outside the facility	2 (20.0%)	8 (80.0%)	0. 016			
Number of ANC visits						
No visit	13 (10.7%)	108 (89.3%)	0.856	1.712	0.005	572.054
Inadequate (1-3 visits)	11 (4.5%)	234 (95.5%)	0.908	1.051	0.453	2.437
Adequate (4 or more visits)	13 (4.1%)	301 (95.9%)	0.979	Reference		

DISCUSSION

Information on infants' birth weight and size at birth is essential to forestall the complications arising from LBW.[6] In the present study, the mean weight of babies was 3.09 ± 0.45 kg with a range of 1.3 – 5.3 kg with 37 (5.4%) of the babies having low birth weight. The mean weight of the babies was similar to that of a study conducted in Jos.[8] However, the prevalence of LBW in this study was lower than that found in Jos,[8] Ghana,[21]Sub-Saharan Africa,[1]India,[22]and United States of America (USA),[23]but comparable to that of the whole of Nigeria – (LBW 7.2%).[6] The low prevalence of LBW in this study is a positive finding which may however been the fact that many women in the rural areas of Nigeria prefer home delivery over giving birth in health facilities due to socio-cultural considerations and resource constraints amongst others;[24,25] it may also have been due to random regional variation. Nevertheless, the low educational status and poor economic power of most mothers seen (table I) and the absence of equipment necessary for effective management of LBW babies in the health facility makes this a problem with deleterious impact on the populace.

This study found that being a housewife was protective, as it greatly reduced the likelihood of the women having LBW babies. This in keeping with a study conducted by Sizain Tanzania,[26]but is contrary to a finding by Tsimbos and Georgia in Greece[27] and de Moraes in Brazil[28] who found that housewife status is linked to higher chances of LBW. The protective nature of housewife status in this study may be due to socio-economic support they get from their husbands and the reduced stress that may arise from working for a living. Indeed, a study found an association between maternal work and LBW.[29]

The reduced likelihood of schooling mothers having LBW neonates is in keeping with a study conducted in Malawi,[30] which showed that the odds of LBW delivery were lower for women who had some education. Other studies, including one conducted in Ibadan, Nigeria[31] and in Bangladesh[32] showed that mothers with low level of education have a significantly higher risk for having babies' with low weight at birth. However, Aghamolaei[29] discovered contrary findings. The protective nature of maternal education on neonatal birth weight may be due to the fact that educated women are more likely to understand and adhere to health messages either because of their social circumstances or the cognitive priming that education affords.[30]This finding evidently calls for investment in female education which obviously has trans-generational effects.

After adjusting for confounders through multivariate analysis, only occupation and place of booking were found to be a predictor of LBW among the women studied. This is likely due to the quality of the human health resource available in the health facility as compared to others in the same locale. The importance of booking pregnancies is evident, however, it is time that the health facility where a pregnant woman is booked is scrutinized for the quality of care offered.

LIMITATIONS OF STUDY

This research was conducted with secondary data and therefore not all variables of interest to the researcher were captured in the facility register. For example, gestational age at booking and the socio- economic status of the women were not recorded. Likewise, this being a hospital based study, does not access the true practice of the health facility catchment area, as the inhabitants have a bias for home delivery.

CONCLUSION

This study revealed the protective effects of housewife status and maternal schooling on low birth weight. A novel finding of this study is the fact that the health facility where a pregnant woman is booked is also vital to pregnancy outcomes, which in this case is birth weight.

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