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Pattern Of Morbidity And Mortality Among Preterm Babies Below 1.5kg As Seen In Rivers State University Teaching Hospital, Nigeria

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Abstract: ***Background: Preterm birth is a global public health problem with more than 60% occurring in Africa and South Asia with Nigeria ranking third among countries with the highest preterm births.***

Objective: To study the pattern of morbidity and mortality among preterm babies below 1.5kg admitted into the neonatal unit of the RSUTH, Nigeria.

Methods: It was a prospective cross-sectional study conducted over a 30-month period, from June 2017 to December 2019 in the neonatal unit of the RSUTH. All preterm babies (inborn) weighing less than 1.5kg were consecutively recruited into the study.

Results: Of 1,579 admissions, 115 were preterm with weights below 1.5kg giving a prevalence of 7.3%. Females predominated with M:F ratio of 1:1.02. The commonest risk factors for preterm deliveries were premature rupture of membrane 62(53.9%), maternal hypertension 32(27.8%) and multiple gestation 28(24.3%). Early Onset Probable Sepsis 102(88.7%), respiratory distress 100(87.0%) and NNJ 75(65.2%) were the commonest morbidities. Apnea 32(72.7%) was the commonest cause of death followed by birth asphyxia 21(44.7%) and HIV-exposed 3(42.9%). Apnea, early onset probable sepsis, NNJ, severe anaemia and late onset probable sepsis were significantly associated with mortality in preterms < 1.5kg, P value < 0.05. Mortality was observed mostly in the extreme preterm 13 (65.0%) and ELBW 16(69.6%) categories.

Conclusion: Preterm babies less than 1.5kg are a common occurrence in our facility with high mortality in the extreme preterm and ELBW categories. Improvement in health infrastructure and quality of care will lead to improved outcome.

Keywords: Preterm babies, Birth weight < 1.5kg, morbidity, mortality, pattern, RSUTH, Nigeria.

I. INTRODUCTION

The world health organization (WHO) defines preterm as any delivery that occurs before 37 completed weeks of gestation or 259 days from the first day of the last menstrual period (World Health Organisation; Nelson Textbook of Paediatrics, 2004). A preterm baby is therefore born too early or too soon and this results in complications of prematurity which are multiple and have far reaching immediate and long term effects. There are sub-categories of preterm in terms of gestational age: extreme preterm (less than 28 weeks), very preterm (28 to 32 weeks) and moderate to late preterm (33 to 36 weeks) (World Health Organisation; Nelson Textbook of Paediatrics, 2004). These preterm babies are also classified into three on the basis of birth weight as low birth weight (LBW) (2.44kg to 1.50kg), very low birth weight (VLBW) (1.49-1.00kg) and extreme low birth weights (ELBW) (less than 1.00kg). An estimated 15 million babies (that is more than 1 in 10 babies) globally are born preterm annually and available data show that this is rising (World Health Organisation; Liu *et al*, 2016). More than 60% of preterm births occur in Africa and South Asia (World Health Organisation; Liu *et al*, 2016). Nigeria ranks third among countries with the greatest number of preterm births after India and China (World Health Organisation; Liu *et al*, 2016). Across 184 countries the rate of preterm birth is 5-18% of babies born, with higher rates being reported from developing

countries (World Health Organisation; Nelson Textbook of Paediatrics; Liu *et al*, 2016; Blencowe *et al*, 2016).

In 2015, preterm birth complications were the leading cause of under-5-mortality being responsible for approximately one million deaths (World Health Organisation; Nelson Textbook of Paediatrics; Liu *et al*, 2016; Blencowe *et al*, 2016). Three quarter of these deaths can be prevented with current cost-effective interventions such as warmth, breastfeeding support and basic care (World Health Organisation; Liu *et al*, 2016; Blencowe *et al*, 2012). Preterm births can occur spontaneously or through medical interventions such as induction of labour or through caesarean section for medical and non-medical reasons. The aetiology of preterm birth is a complex interaction between maternal, fetal, placental and uterine factors (World Health Organisation; Nelson Textbook of Paediatrics, 2004; Liu *et al*, 2016; Blencowe *et al*, 2012; Goldenberg, Culhane, Lams, Romeo, 2008). The common causes include multiple pregnancy, infections, maternal diabetes mellitus, maternal hypertension, idiopathic and genetic abnormalities in the fetus (World Health Organisation; Nelson Textbook of Paediatrics, 2004; Liu *et al*, 2016; Blencowe *et al*, 2012; Goldenberg, Culhane, Lams, Romeo, 2008). Other associated factors include single parenthood, teenage pregnancy and low socioeconomic status (Nelson Textbook of Paediatrics, 2004).

The WHO guidelines on reduction of preterm birth can be divided into two – interventions for mother and interventions in newborn care (WHO; Convoy, Morrissey, Wolman, 2014). The interventions for the mother include steroid injections for at risk pregnancies, antibiotics following preterm drainage of liquor, and magnesium sulfate to prevent neurological impairment in the baby (Goldenberg, Culhane, Lams, Romeo, 2008; WHO; Convoy, Morrissey, Wolman, 2014). Interventions in newborn care include thermal care, feeding support, Kangaroo Mother Care (KMC), oxygen use, antibiotics and respiratory support (Goldenberg, Culhane, Lams, Romeo, 2008; WHO; Convoy, Morrissey, Wolman, 2014). Achieving the Sustainable Development Goals (SDGs), including universal health coverage (UHC), by 2030 requires action to end preventable newborn and under-5 deaths (World Health Organisation, 2018) including reducing Nigeria's present neonatal mortality rate of 39/1000 live births (Nigeria Demographic Health survey).

The pattern of preterm morbidity and mortality differs from one geographic location to another as well as over time. The present study was therefore carried out to determine the pattern of morbidity and mortality among preterm infants less than 1.5kg in Rivers State University Teaching Hospital (RSUTH), Nigeria. The understanding of the pattern of morbidity and mortality from this study will be helpful in designing and the implementation of preventive strategies.

II. MATERIALS AND METHODS

This was a prospective study carried out in the inborn section of the neonatal unit of the Rivers State University Teaching Hospital, Nigeria. The RSUTH is a state-owned tertiary health institution with different departments namely Paediatrics, Obstetrics & Gynaecology, Family Medicine, Internal Medicine, Surgery, Radiology, Pathology, Physiotherapy, Pharmacy and Nursing. The Paediatrics department of the hospital has units such as neonatology, neurology, nephrology, cardiology, respiratory, endocrine, haemoncology, community paediatrics and infectious disease units. The neonatology unit is headed by two consultants working with senior registrars, registrars, house officers and paediatric nurses. Babies admitted into the inborn unit are those delivered in the facility while the outborn unit takes care of babies referred from other facilities within and outside the State.

Ethical approval for the study was obtained from the Rivers State Health Research Ethics Committee and parental consent was taken from parents/caregivers of the babies. All live newborn infants (male and female), weighing less than 1.5kg, admitted into the inborn unit from June 2017 to December 2019, a period of 30 months, and whose parents/caregivers gave consent, were consecutively recruited into the study. A pre-designed proforma was used to capture information about the mothers and infants (examination findings, diagnosis, interventions, complications, and outcome).

The maternal details taken were age, marital status, antenatal clinic (ANC) attendance, receipt of antenatal steroids, educational level, occupation and Human Immunodeficiency Virus (HIV) status. A history of possible risk factors were also documented such as premature rupture of membrane, maternal hypertension, multiple pregnancy, maternal febrile illness, antepartum haemorrhage, chorioamnionitis, abdominal massage, ingestion of native herbs and illicit drugs. The mode of delivery was also ascertained – vaginal delivery or Caesarean section (CS). The gestational age of the child was calculated using the first day of the last menstrual period or 1st trimester ultrasonography (USG) findings.

All recruited infants were weighed within 24 hours of admission using a *Seca* electronic weighing scale. The scale was set at 0.00 and each child was quickly weighed, fully undressed. The infants were classified as very low birth weight (VLBW) if the weight is between 1.00 -1.49kg and extreme low birth weight (ELBW) if the weight is less than 1.00kg. Based on the gestational age (GA), the babies were classified as extreme preterm (GA <28 weeks), very preterm (GA = 28-32 weeks) or moderate preterm (GA 33-36 weeks).

The temperature at presentation was taken with an electronic thermometer (*Omron Healthcare, Hoofddorp, Netherlands*) and documented. The babies were fully examined and congenital abnormalities noted if present. Clinical diagnosis was made based on the unit protocols and investigations were carried out as needed per child and included complete blood count, random blood sugar, serum bilirubin estimation, malaria parasite test, serum electrolytes, urea and creatinine.

The different interventions carried out such as incubator nursing, antibiotic therapy, phototherapy, oxygen therapy, intravenous fluid therapy, prophylactic antiretroviral therapy for HIV-exposed infants were according to the unit protocols. Complications developed during their hospital stay such as apnea, early onset probable sepsis, respiratory distress, hypoglycaemia, seizure, bleeding problems, necrotizing

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enterocolitis, malaria, severe anaemia and late onset probable sepsis were noted. The duration of hospital stay and outcome (discharge or death) were also noted. All infants were weighed again at discharge or death.

All the data was entered into a Microsoft Excel spread sheet and analyzed by using SPSS version 23. The results were presented in frequency tables, percentages, Pie and bar charts. Chi square test was used to define the clinical significance between different variables. P value of less than 0.05 was considered significant at 95% confidence interval.

III. RESULTS

CHARACTERISTICS OF THE STUDY POPULATION

Of 1,579 admissions into the inborn section of the neonatal unit, 115 were preterms with birth weights below 1.5kg giving a prevalence of 7.3%. There were 57(49.6%) males and 58(50.4%) females giving a M:F ratio of 1:1.02. Seventy (60.9%) preterms presented within an hour of birth and majority were delivered via spontaneous vaginal delivery (SVD), 62(53.9%). The commonest type of preterms based on their gestational age were of the very preterm category, 81 (70.4) while the very low birth weight babies were commonest 92 (80.0%) based on their birth weights. Mothers of the preterms were mainly within the age group 31-43years (60;52.2%), majority 101 (87.8%) had antenatal care and received antenatal steroids before delivery, 66 (57.4%). Most mothers had negative HIV status 89 (77.4%). Majority had secondary level of education 57 (49.6%) and were mainly business entrepreneurs 44 (38.3%) and civil/public servants 30 (26.1%). Mean temperature at presentation was 35.88 ± 0.74, Table I.

Variables	Frequency, n=115 (%)
Sex	
Male	57 (49.6)
Female	58 (50.4)
Age at presentation (hour)	
≤ 1	70 (60.9)
> 1	45 (39.1)
Birth order	
1st	47 (40,9)
2nd	32 (27.8)
3-7th	36 (31.3)
Type of delivery	
SVD	62 (53.9)
CS	53 (46.1)
Type of prematurity by GA(weeks)	
Extreme Preterm (GA < 28)	20 (17.4)
Very Preterm (GA=28-32)	81 (70.4)
Moderate-late Preterm(GA=33-36)	14 (12.2)
Type of prematurity by birth weight(kg)	
VLBW (1.00-1.49)	92 (80.0)
ELBW (< 1.00)	23 (20.0)
Mother's age(years)	
18-30	55 (47.8)
31-43	60 (52.2)
Mother's marital status	
Single	4 (3.5)
Married	111 (96.5)
ANC attendance	
Yes	101 (87.8)
No	14 (12.2)
Received antenal steroids	
Yes	66 (57.4)
No	49 (42.6)
Mother's level of education	
Primary	6 (5.2)
Secondary	57 (49.6)
Tertiary	52 (45.2)
Mother's occupation	
Business entrepreneur	44 (38.3)
Civil/public service	30 (26.1)
Artisans	15 (13.0)
Professionals	14 (12.2)
Unemployed	12 (10.4)

Table I: Characteristics of the study population

RISK FACTORS OF PRETERM BABIES < 1.5KG

The commonest risk factors of preterm babies < 1.5kg were premature rupture of membranes 62(53.9%), maternal hypertension 32(27.8%), multiple pregnancy 28(24.3%) and maternal febrile illness 23(20.0%) while the least was ingestion of illicit drugs 1(0.9%), Figure 1.

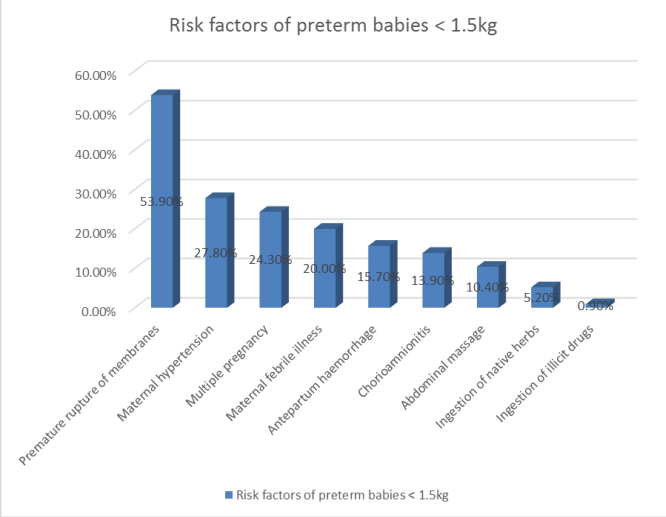

Figure 1: Risk factors of preterm babies < 1.5kg

MORBIDITY PATTERN OF PRETERM BABIES < 1.5KG

Commonest clinical conditions observed in preterm babies < 1.5kg were early onset probable sepsis 102(88.7%), respiratory distress 100(87.0%), neonatal jaundice 75(65.0%) and severe anaemia 64(55.7%) while the least was congenital abnormalities 2(1.7%). Of 50 preterms with malaria, transfusion malaria predominated 39 (78.0%) followed by acquired neonatal malaria 9 (18%) while the least was congenital malaria 2 (4.0%) Table II.

Variables	Frequency, n=115 (%)
Early onset probable sepsis	102 (88.7)
Respiratory distress	100 (87.0)
Neonatal jaundice	75 (65.2)
Severe anaemia	64 (55.7)
Malaria	50 (43.5)
Late onset probable sepsis	48 (41.7)
Perinatal asphyxia	47 (40.9)
Apnea	44 (38.3)
Hypoglycaemia	42 (36.5)
Necrotizing enterocolitis	9 (7.8)
Seizure	4 (3.5)
Birth trauma	4 (3.5)
Bleeding disorder	3 (2.6)
Meningitis	3 (2.6)
Congenital abnormalities	2 (1.7)

Table II: Morbidity pattern of preterm babies < 1.5kg

MORBIDITY AND MORTALITY PATTERN AMONG PRETERM BABIES < 1.5KG

Apnea 32(72.7%) was the commonest cause of death followed by birth asphyxia 21 (44.7%), HIV exposed 3 (42.9%), early onset probable sepsis 39 (38.2%), respiratory distress 37 (37.0%) and hypoglycaemia 14 (33.3%). Apnea,

early onset probable sepsis, neonatal jaundice, severe anaemia and late onset probable sepsis were significantly associated with mortality in preterms < 1.5kg, P value < 0.05, Table III.

Morbidities	Mortality		P value
	Yes (%)	No (%)	
Apnea			
Yes	32 (72.7)	12 (27.3)	< 0.0001*
No	8 (11.3)	63 (88.7)	
Birth asphyxia (MBA & SBA)			
Yes	21 (44.7)	26 (55.3)	0.064
No	19 (27.9)	49 (72.1)	
HIV exposed			
Yes	3 (42.9)	4 (57.1)	0.043*
No	26 (29.2)	63 (70.8)	
Unknown	11 (57.9)	8 (42.1)	
Early onset probable sepsis			
Yes	39 (38.2)	63 (61.8)	0.032*
No	1 (7.7)	12 (92.3)	
Respiratory distress			
Yes	37 (37.0)	63 (63.0)	0.253
No	3 (20.0)	12 (80.0)	
Hypoglycaemia			
Yes	14 (33.3)	28 (66.7)	0.805
No	26 (35.6)	47 (64.4)	
Seizure			
Yes	1 (25.0)	3 (75.0)	1.000
No	39 (35.1)	72 (64.9)	
Bleeding disorder			
Yes	1 (33.3)	2 (66.7)	1.000
No	39 (34.8)	73 (66.7)	
Necrotizing enterocolitis			
Yes	3 (33.3)	6 (66.7)	1.000
No	37 (34.9)	69 (65.1)	
Neonatal jaundice			
Yes	18 (24.0)	57 (76.0)	0.001*
No	22 (55.0)	18 (45.0)	
Severe anaemia			
Yes	15 (23.4)	49 (76.6)	0.004*
No	25 (49.0)	26 (51.0)	
Late onset probable sepsis			
Yes	9 (18.8)	39 (81.3)	0.002*
No	31 (46.3)	36 (53.7)	

*= Statistically significant

Table III: Morbidity and mortality pattern among preterm babies < 1.5kg

OUTCOME OF PRETERMS < 1.5KG ACCORDING TO GESTATIONAL AGE

Of 115 preterms admitted 76 (66.1%) were discharged while 39 (33.9%) died. The mean age at discharge was 44.6 ± 16.7 days while the mean weight at discharge was 1.6 ± 0.1 kg. The mean weight at death was 1.0 ± 0.3kg.

Moderate-late preterms had most discharges 12(85.7%) while extreme preterms had the least 7 (35.0%). Mortality was observed mostly in the extreme preterm category 13(65.0%) and the least among the moderate-late category 1(7.1%). These differences were statistically significant, *P value* < 0.05, Table IV.

Preterm according to GA(weeks) n=115	Outcome					
	Discharged			Died		
	Yes(%)	No(%)	P value	Yes(%)	No(%)	P value
Extreme preterm (GA<28)	7(35.0)	13(65.0)		13(65.0)	7(35.0)	
Very preterm (GA=28-32)	57(70.4)	24(29.6)	0.003*	26(32.1)	55(67.9)	0.001*
Moderate-Late preterm(33-36)	12(85.7)	2(14.3)		1(7.1)	13(92.9)	

Table IV: Outcome of preterms < 1.5kg according to gestational age

OUTCOME OF PRETERMS ACCORDING TO BIRTH WEIGHT

Of 92 VLBW babies, 68 (73.9%) were discharged while 24 (26.1%) died whereas of 23 ELBW babies admitted, 8 (34.8) were discharged while 15 (69.2%) died. This difference was statistically significant, P value < 0.05. There was statistical difference in the mean age at discharge and the mean weight at death between the VLBW and ELBW babies, P value < 0.05, Table V.

Outcome	VLBW n=92 (%)	ELBW n=23 (%)	P value
Discharged			
Yes	68 (73.9)	8 (34.8)	< 0.0001
No	24 (26.1)	15 (65.2)	
Mean age at discharge (days)	43.0 ± 16.8	57.5 ± 9.2	0.019
Mean weight at discharge (kg)	1.6 ± 0.1	1.6 ± 0.1	0.373
Died			
Yes	24 (26.1)	16 (69.6)	< 0.0001
No	68 (73.9)	7 (30.4)	
Mean weight at death (kg)	1.1 ± 0.2	0.8 ± 0.3	0.002

Table V: Outcome of preterms according to birth weight

IV. DISCUSSION

The prevalence of preterm babies < 1.5kg admitted into the neonatal unit of the Rivers State University Teaching Hospital, Nigeria was 7.3%. This is much higher than the 4.4% and 5.7% reported in Ethiopia (Gebreslasie, 2016) and Ekiti State (Akintayo, Awoleke, Ogundare, Olatunya, Aduloju, 2015), south-west Nigeria respectively considering that all preterm babies were included in the latter studies irrespective of their weights. Varying prevalence rates of preterm babies observed were 11.8%, 24.0% and 32.86% in Nigeria (Mukuolu, Suleman Adesiyun, Adeniyi, 2010; Kunle-Olowu, Peterside, Adeyemi, 2014; Bello, Pius, Ibrahim, 2019), 18.3% in Kenya (Waguru, Wasunna, Laving, Wamalwa, Ng'ang'a, 2018), 26.5% in Cameroun (Chiabi *et al*, 2013), 28.25% in India (Kuppusamy & Vidhyadevi, 2016) and 12.8% in USA (March of Dimes, 2010). This varying prevalence could be due to difference in geographic areas, varying risk factors and the different study designs.

There was a slight female preponderance in the present study as also observed in Nnewi (Ugochukwu, Ezechukwu, Agbata, Ezumba, 2002), south-east Nigeria and Ethiopia (Zeleke, Zelalem, Mohammed, 2012). The contrary was however observed in Bayelsa (Kunle-Olowu, Peterside, Adeyemi, 2014), Maiduguri (Bello, Pius, Ibrahim, 2019), Kenya (Waguru, Wasunna, Laving, Wamalwa, Ng'ang'a, 2018) and Cameroun (Chiabi *et al*, 2013). The reason for this difference could not be ascertained.

The commonest risk factors of preterm births in RSUTH was premature rupture of membranes followed by maternal hypertension, multiple pregnancies and maternal febrile illnesses. Similar findings were observed in other parts of Nigeria (Akintayo, Awoleke, Ogundare, Olatunya, Aduloju, 2015; Kunle-Olowu, Peterside, Adeyemi, 2014; Ugochukwu, Ezechukwu, Agbata, Ezumba, 2002; Ambe, Idrisa, Usman, 2007). Kuppusamy & Vidhyadevi in contrast reported maternal anaemia as the commonest risk factor for preterm births followed by preterm rupture of membranes, pregnancy induced hypertension and multiple pregnancies. This difference could be attributed to the varying geographic locations. Premature rupture of membranes has been reported a determinant of preterm deliveries in several studies (Akintayo, Awoleke, Ogundare, Olatunya, Aduloju, 2015; Mukuolo, Sukeman, Adesiyun, Adeniyi, 2010; Romeo *et al*,

1989; Martin *et al*, 1982). This is not surprising as it has been associated with subclinical chorioamnionitis and chlamydia vaginitis which usually leads to preterm deliveries (Romeo *et al*, 1989; Martin *et al*, 1982). A significant association of maternal hypertension with preterm deliveries was reported in Ethiopia (Gebreslasie, 2016) and Nigeria (Mukuolo, Sukeman, Adesiyun, Adeniyi, 2010). It is important to note that maternal hypertension causes vascular damage leading to acute or chronic utero-placental insufficiency. This leads to antepartum and intrapartum fetal hypoxia predisposing to preterm delivery (Ferer, Sibai, Mulrow, Chiquette, Stevens, Cornell, 2000). Interestingly, multiple pregnancy, the 3rd commonest risk factor for preterm delivery causes excessive distension of the uterus which stimulates premature uterine contractions leading to preterm delivery (Wood, Marlow, Costeloe, Gibson, Wilkinson, 2000).

Early onset probable sepsis, respiratory distress and neonatal jaundice were the commonest clinical conditions observed in preterms < 1.5kg in the present study. Sepsis being the commonest morbidity observed in the present study is due to their very immature immune system thus control of sepsis is integral in the management of preterms < 1.5kg (McGuire, Clerihew, Fowlie, 2004). This finding was in consonance with studies carried out in Bayelsa (Kunle-Olowu, Peterside, Adeyemi, 2014), south-south Nigeria and Enugu (Iyoke *et al*, 2014) south-east Nigeria where respiratory problems, neonatal jaundice and neonatal sepsis were the commonest morbidities. In contrast however, birth asphyxia, apnea and small for gestational age (SGA) were the commonest morbidities observed in Maiduguri (Ambe, Idrisa, Usman, 2007). These differences could be due to varying risk factors predisposing to preterm births as well as varying diagnostic criteria.

Apnea was the commonest cause of death in these babies followed by birth asphyxia, HIV exposure and early onset probable sepsis. Kunle-Olowu, Peterside, Adeyemi, 2014 in Bayelsa reported seizure and necrotizing enterocolitis as the commonest causes of death followed by respiratory problems and hypoglycaemia. Ochoga, Micheal, Abah, Dabit, Ikuren, Ebonyi, 2018 in Benue state, north-central Nigeria observed respiratory distress and birth asphyxia as the commonest causes of mortality followed by anaemia and sepsis whereas in Nnewi, south-eastern Nigeria, Ugochukwu, Ezechukwu, Agbata, Ezumba, 2002 observed respiratory distress syndrome and severe birth asphyxia as the commonest cause of mortality followed by neonatal sepsis and neonatal jaundice. Respiratory distress syndrome as the commonest cause of mortality was also observed by Sritipsukho, Suarod, Sritipsukho, 2007 in Thailand. In Cameroun however, Chiabi *et al, 2013*[16] reported neonatal sepsis, birth asphyxia and congenital malformations as the commonest causes of mortality in preterm babies. It is however worthy of note that in more advanced countries, lethal congenital abnormalities were the commonest causes of death (Doyle, Rogerson, Chuang, James, Bowman, Davis, 1999).

The survival of preterms depend on the maturity of the preterm, quality of medical care or technological advancement of the neonatal unit as well as the quality of medical personnel. Of all preterm babies < 1.5kg admitted into the neonatal unit in the present study, 66.1% survived or were discharged home. This is comparable with the 65.9% and 63.2% reported in Bayelsa (Kunle-Olowu, Peterside, Adeyemi, 2014) and Benue (McGuire, Clerihew, Fowlie, 2004) respectively but much lower than the 89.7% reported in Saudi Arabia (Aljohani, Qaraqei, Al-Matary, 2020) and 91.7% in a UK (Seaton, Barker, Draper, Abrams, Modi, Manktelow, 2019) study.

The survival rate of 85.7% in the moderate-late preterm category is comparable to the 83.8% observed in Bayelsa (Kunle-Olowu, Peterside, Adeyemi, 2014). The survival rate of 35.0% observed in the extreme preterms was the lowest in the category of preterms according to gestational age as compared to the moderate-late preterms and the very preterms. This was however much higher than the 14.0% and the 11.1% observed in Enugu (Iyoke *et al*, 2014) and Bayelsa (Kunle-Olowu, Peterside, Adeyemi, 2014) respectively. This poor outcome in the extreme preterm group is not uncommon in developing countries due to the poor health infrastructure such as lack of respiratory support (CPAP, mechanical ventilators, intranasal oxygen), feeding support (parenteral nutrition), unavailability of endogenous surfactant therapy and/or huge cost when available and the inadequate use of antenatal steroids as also observed in the present study where only half of the mothers received antenatal steroids.

The discharge or survival rate of VLBW babies in the present study of 73.9% is comparable with the 72.0% and 70.3% observed in South Africa (Velaphi, Mokhachane, Mphahele, Beckh-Arnold, Kuwanda, Cooper, 2005) and Nnewi (Ugochukwu, Ezechukwu, Agbata, Ezumba, 2002), Nigeria respectively but much lower than the 81% observed in Thailand (Ochoga, Micheal, Abah, Dabit, Ikuren, Ebonyi, 2018). This is not surprising due to the availability of better equipped neonatal intensive care as well as the liberal use of surfactant and mechanical ventilators.

A third of ELBW (34.8%) babies survived in the present study. This is comparable with the 32.0% reported in South Africa (Velaphi, Mokhachane, Mphahele, Beckh-Arnold, Kuwanda, Cooper, 2005) but much lower than the 52% in Thailand (Ochoga, Micheal, Abah, Dabit, Ikuren, Ebonyi, 2018). In Nnewi (Ugochukwu, Ezechukwu, Agbata, Ezumba, 2002) however, there was no survival in the ELBW group. This could be as a result of poorly equipped neonatal unit as advances in prenatal and neonatal care have been shown to improve the survival rate of preterm babies (Gebreslasie, 2016).

The mean duration of hospital stay of 57.5 ± 9.2 days in the ELBW group of preterms was significantly longer than the 43.0 ± 16.8 in the VLBW group. This was also observed in Bayelsa (Kunle-Olowu, Peterside, Adeyemi, 2014), Saudi Arabia (Aljohani, Qaraqei, Al-Matary, 2020) and the UK (Seaton, Barker, Draper, Abrams, Modi, Manktelow, 2019; Manktelow, Draper, Field, Field, 2010). This is not surprising as there is an inverse association between the length of stay and the birth weights as observed in a study in Saudi Arabia (Aljohani, Qaraqei, Al-Matary, 2020) and the UK (Manktelow, Draper, Field, Field, 2010). This is because these smaller babies require more extended care.

V. CONCLUSION

The prevalence of preterm babies <1.5kg in RSUTH is high and the commonest risk factors are premature rupture of membrane, maternal hypertension and multiple pregnancy. Early onset probable sepsis, respiratory distress, neonatal jaundice and severe anaemia are the commonest morbidities while apnea is the commonest cause of mortality followed by birth asphyxia and HIV exposure. Apnea, probable sepsis, neonatal jaundice and severe anaemia are significantly associated with mortality in preterms < 1.5kg. Mortality was high in the extreme preterm and extreme low birth weight categories. Thus improved health infrastructure, improved quality of medical care in neonatal units as well as adequately trained personnel will lead to better outcomes.

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