International Journal of Health Sciences and Research
Vol.11; Issue: 2; February 2021
Website: www.ijhsr.org
Original Research Article *ISSN: 2249-9571*

Clinical Outcome of Premature Babies Admitted in the Neonatal Unit of a Tertiary Hospital in Port Harcourt

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ABSTRACT

Background: Prematurity, a significant cause of under-five and neonatal mortality and morbidity is on the increase especially in Africa and Asia and threatens efforts to significantly reduce under-five mortality in middle- and low-income countries.
Objectives: To determine the prevalence and outcome of premature babies in Rivers State University Teaching Hospital, Port Harcourt.
Materials and methods: A one-year prospective study was carried out in the special care baby unit of the Rivers State University Teaching Hospital. A pre tested questionnaire was used to collect data from mothers and babies delivered prematurely from the time of admission to discharge or death.
Results: Of 468 neonates admitted into the unit, 217 (46.4%) were preterm babies, majority of whom were delivered at 33-36 weeks (74.7%) and weighed 1.5-2.49kg (57.1%). The commonest pregnancy complications of mothers of premature babies were hypertension in pregnancy (41.7%) and premature rupture of membranes (34.8%), while neonatal jaundice (58.5%), respiratory distress (57.1%) and probable sepsis (55.3%) were common morbidities observed. A total of 191 (88%) of them were discharged home and this outcome was significantly associated with gestational age (GA) of 33-36 weeks, birth weight > 2.5kg, normal APGAR scores, feeds commenced on or after 2nd day of life, caesarean section delivery and those with temperatures below 36^{0}C at presentation, ($p < 0.05$).
Conclusion: The prevalence of prematurity was high. Early identification and management of predisposing factors of preterm deliveries and adequate management of these babies when delivered will reduce the prevalence and improve the outcome of premature babies.

Keywords: Premature babies, Clinical outcome, Port Harcourt

INTRODUCTION

The world Health organization (WHO) defines preterm delivery as a live birth occurring before 37 completed weeks of gestation and these are classified as extreme, very, moderate-late preterm deliveries occurring at < 28 weeks, 28 to 32 weeks, 33 to < 37 weeks respectively. [1]

The global burden of premature delivery is on the increase especially in low- and middle-income countries. [2] It was estimated that about 15 million premature deliveries take place globally, that is about 1:10 births annually. [3] Prematurity is also the leading cause of under-five mortality globally, responsible for about 1.055 million (15.9%) under five mortality in 2015. [4] Africa and South Asia are responsible for about 60% of all preterm deliveries and Nigeria comes only behind India and China in the global burden of preterm deliveries with about 773,600 preterm deliveries occurring in the country annually. [3,5,6] The prevalence rates of premature deliveries

recorded from different tertiary centres in Nigeria are quite variable, ranging from 5.9-32.86%. [7-11]

Premature delivery can occur spontaneously or can be induced by obstetricians as a result of one or more complications in pregnancy either for medical or non-medical reasons. [1,3] The common causes and risk factors for premature deliveries include preterm premature rupture of membranes, multiple gestation, maternal infections, gestational diabetes, hypertension in pregnancy, antepartum haemorrhage, anaemia in pregnancy among others. Sometimes, the exact cause of the preterm delivery may be uncertain. [8,10,11]

The chances of neonatal survival when a child is born preterm are slim and are inversely proportional to the gestational age of the child at birth. [5,12] Besides, the period after delivery is marked by different morbidities from feeding difficulties, sepsis, asphyxia, respiratory distress syndrome, neonatal jaundice and hypoglycaemia among others to long term morbidities such as learning, visual, hearing and developmental abnormalities. [5,6,10,11]

These immediate and long-term complications and neonatal mortality associated with prematurity can be mitigated if the risk factors for prematurity are prevented from taking place or detected and managed early in the course of the pregnancy. In addition, prompt identification and management of the morbidities associated with preterm babies is also vital in improving their outcome.[13,14] This study was therefore undertaken to determine the prevalence of prematurity, common pregnancy complications in mothers of premature babies and the clinical outcome of preterm babies in our institution in a bid to possibly reduce the prevalence of prematurity and improve the clinical outcome of preterm babies in the future.

MATERIALS AND METHODS

Study Design: It was a one-year prospective study carried out between April 2019 to March 2020.

Study Site: The study was carried out in the special care baby unit (SCBU) of the Rivers State University Teaching Hospital (RSUTH), Port Harcourt Nigeria. The hospital, a tertiary health care institution is located in the South-South geo political zone in Nigeria. It serves the health care needs of the population in Port Harcourt metropolis in addition to receiving referrals from the primary and secondary hospitals in Rivers State and neighbouring South-East and South-South States in Nigeria.

All ill new borns aged 0-28 days at the time of presentation to the hospital are admitted into the SCBU. It is a 30 bed unit in the hospital and is managed by 2 consultant paediatricians, senior and junior paediatric residents, paediatric nurses of different cadre in addition to house officers and administrative staff. The unit consist of an inborn and outborn section. The inborn section admits all babies whose mothers had antenatal care and deliveries in RSUTH, the primary and secondary health centres owned by the Rivers State Government while the outborn section admits all babies born to mothers who did not attend antenatal or deliver in RSUTH, primary and secondary health facilities owned by the State Government. The inborn section consists of 7 functional incubators, 10 phototherapy machines, 2 radiant warmers / resuscitaire, 3 suction machines, 3 oxygen concentrators and oxygen cylinders whereas the outborn section consist of 3 functional incubators, 5 phototherapy machines, 1 suction machine, 1 radiant warmer / resuscitaire, 2 oxygen concentrators and oxygen cylinders. The unit has 2 separate breast feeding rooms for the inborn and outborn section where Kangaroo mother care is also practiced.

Study Population: The study population comprised of all inborn neonates admitted into the SCBU during the study period and

delivered at <37 completed weeks of gestation.

Sample size: Two hundred and seventeen inborn preterm babies who met the inclusion criteria were consecutively recruited into the study over the one-year period.

Inclusion Criteria:

Preterm inborn babies delivered at <37 completed weeks of gestation calculated from the mother's last menstrual cycle or ultrasonography done within the first trimester of pregnancy.

Preterm babies whose caregivers gave written informed consent to participate in the study.

Exclusion criteria:

Babies delivered at 37 or more weeks of gestation calculated from the mother's last menstrual cycle or ultrasonography, outborn babies and those whose caregivers declined to participate in the study were excluded.

Ethical Clearance: Ethical clearance was obtained from the Ethics Committee of the Rivers State University Teaching Hospital. Written informed consent was also obtained from the care givers of the participants.

METHOD

The researchers trained all the junior and senior residents posted to SCBU during the period of data collection on how to complete the questionnaire and to identify and record any morbidity occurring in the preterm throughout the duration of their admission. A pre tested questionnaire was used to collect data for the study after obtaining informed consent from the caregivers. Information collected included demographic data on the mother and baby, maternal data on Last menstrual period (LMP), booking status and complications that occurred during pregnancy. At admission, the gestational age of the child was determined, and the baby examined by the researchers or trained research assistants. The age of the baby at presentation, temperature, respiratory rate, heart rate, birth weight, APGAR score and mode of delivery were recorded. Diagnosis of various morbidities was made based on the unit's protocol and relevant investigations were done to aid diagnosis. The babies were followed up daily throughout their admission in SCBU and data were collected on the morbidities (present at presentation and those that developed subsequently while on admission) and mortality.

The data obtained were recorded in Microsoft Excel spreadsheet and analysed using IBM Statistical Package for Social Sciences (SPSS) version 23. Statistical significance was set at 95% confidence interval. The results obtained were presented as tables and charts.

RESULT

Socio-demographic characteristics of premature babies

Table I: Socio-demographic characteristics of premature babies

Variables	Frequency, n=217 (%)
Sex	
Male	100 (46.1)
Female	117 (53.9)
Age at presentation (hours)	
≤ 24	214 (98.6)
> 24	3 (1.4)
Birth order	
1st	90 (41.5)
2nd	58 (26.7)
3rd and above	69 (31.8)
Birth weight (kg)	
< 1.0	8 (3.7)
1.0 – 1.49	27 (12.5)
1.5 – 2.49	124 (57.1)
> 2.5	58 (26.7)
Mode of delivery	
SVD	55 (25.3)
CS	162 (74.7)
Commencement of feeds	
Day 1	64 (29.5)
Day 2 and above	153 (70.5)
Temperature at presentation (^{O}C)	
< 36	133 (61.3)
36 – 37.5	71 (32.7)
> 37.5	13 (6.0)

SVD-Spontaneous vaginal delivery, CS-Caesarean section

Out of 468 inborn neonates admitted into the SCBU during the period of study, 217 were premature giving a prevalence of 46.4%. Females predominated with a M:F ratio of 1:1.2. Majority presented within

24hours of life, 214 (98.6%) with mean age at presentation of 3.47 ± 10.35 hours and were mostly of 1st birth order, 90 (41.5%). Birth weights of 1.5 – 2.49kg were commonest, 124 (57.1%) with mean birth weight of 2.13 ± 0.80kg. Feeds were commenced from the 2nd day of life for most premature babies, 153 (70.5%) and the commonest temperature at presentation was < 36^0C, 133 (61.3%) with mean temperature at presentation being 35.8 ± 1.04^0C. Most premature babies were delivered via Caesarean section, 162 (74.7%), Table I.

Prematurity according to gestational age

The commonest type of prematurity according to gestational age was moderate-late preterm with gestational age 33-36 weeks, 162 (74.7%) while the least was the extreme preterm with gestational age < 28 weeks, 8 (3.7%), Figure 1.

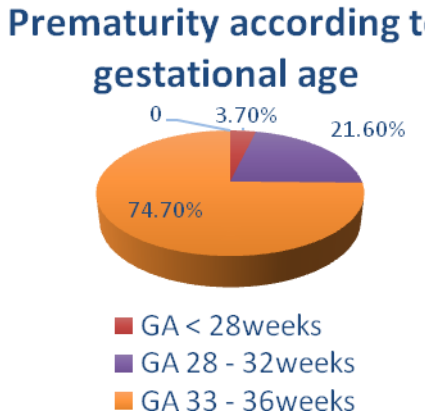
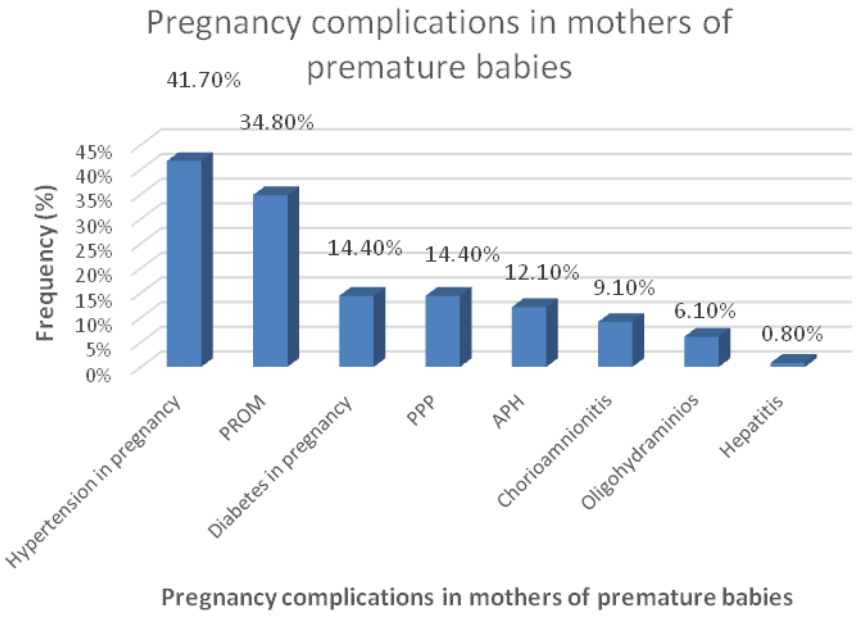


Figure 1: Prematurity according to gestational age

Pregnancy complications in mothers of premature babies



(PROM – Premature rupture of membranes, PPP- Peripartum pyrexia, APH- Antepartum haemorrhage)

Figure 2: Pregnancy complications in mothers of premature babies

The commonest pregnancy complications in mothers of premature babies was hypertension in pregnancy, 55 (41.7%) followed by premature rupture of membranes (PROM), 46 (34.8%), diabetes mellitus in pregnancy, 19 (14.4%) and peripartum pyrexia (PPP), 19 (14.4%), Figure 2.

Association of maternal factors with prematurity

Multiple pregnancy, late antenatal care (ANC) booking, primary health care (PHC) as place of ANC and the presence of pregnancy complications in the mother were significantly associated with prematurity (P value < 0.05), Table II.

Table II: Maternal factors associated with prematurity

Variables	Total n= 468	Prematurity status Premature, (%)	Term, (%)	P value
Mother's age(years)				
17-26	66	27 (40.9)	39 (59.1)	
27-36	323	151 (46.7)	172 (53.3)	0.578
> 36	79	39 (49.4)	40 (50.6)	
Parity				
Primiparous	172	75 (43.6)	97 (56.4)	0.361
Multiparous	296	142 (48.0)	154 (52.0)	
Marital status				
Married	435	204 (46.9)	231 (53.1)	0.405
Single	33	13 (39.4)	20 (60.6)	
Type of pregnancy				
Singleton	419	175 (41.8)	244 (58.2)	< 0.0001*
Multiple	49	42 (85.7)	7 (14.3)	
Time of ANC booking				
Early	445	201 (45.2)	244 (54.8)	0.011*
Late	22	16 (72.7)	6 (27.7)	
Place of ANC, n=446				
PHC	162	87 (53.7)	75 (46.3)	
General hospital	2	2 (100.0)	0 (0.0)	0.003*
RSUTH	282	112 (39.7)	170 (60.3)	
HIV status				
Positive	18	11 (61.1)	7 (38.9)	0.201
Negative	450	206 (45.8)	244 (54.2)	
Pregnancy complications				
Yes	261	135 (51.7)	126 (48.3)	0.009*
No	207	82 (39.6)	125 (60.4)	

ANC-Antenatal care, PHC-Primary health centre, RSUTH-Rivers State University Teaching Hospital HIV-Human immunodeficiency virus

Outcome of premature babies according to gestational age and birth weight

Of 217 premature babies, 191 (88.0%) were discharged home while 26 (12.0%) died. Majority of premature babies with GA 33-36 weeks were discharged home, 154(95.1%) while the least discharged were of GA < 28 weeks, 2 (25.0%).

Babies ≥ 2.5kg were mostly discharged home 56 (96.6%) followed by babies with birth weights 1.5 – 2.49kg, 117 (94.4%) while the least were babies with birth weights < 1kg, 1 (12.5%).

Gestational age and birth weight were significantly associated with preterm mortality (P value < 0.0001), Table III.

Table III: Outcome of preterm babies according to gestational age and birth weight.

Variables	Total n=217	Outcome Discharged, (%)	Died, (%)	P value
Gestational age (weeks)				
< 28	8	2 (25.0)	6 (75.0)	
28 – 32	47	35 (74.5)	12 (25.5)	< 0.0001*
33 – 36	162	154 (95.1)	8 (4.9)	
Birth weight (kg)				
< 1	8	1 (12.5)	7 (87.5)	
1.0 – 1.49	27	17 (63.0)	10 (37.0)	
1.5 – 2.49	124	117 (94.4)	7 (5.6)	< 0.0001*
≥ 2.5	58	56 (96.6)	2 (3.4)	

Outcome of premature babies according to morbidity pattern

The commonest morbidities seen in premature babies were neonatal jaundice 127 (58.5%) followed by respiratory distress 124 (57.1%), probable sepsis 120 (55.3%) and hypoglycaemia 52 (24.0%). There were significantly more deaths in premature babies who had respiratory distress, hypoglycaemia, severe anaemia, birth asphyxia, apnea and bleeding disorders (P value < 0.05), Table IV.

Table IV: Outcome of preterm babies according to morbidity pattern

Morbidity pattern	Total	Outcome		P value
	n=217(%)	Discharged, n=191(%)	Died, n=26(%)	
Neonatal jaundice	127 (58.5)	116 (60.7)	11 (42.3)	0.090
Respiratory distress	124 (57.1)	102 (53.8)	22 (84.6)	0.003*
Probable sepsis	120 (55.3)	106 (56.5)	14 (53.8)	0.835
Hypoglycaemia	52 (24.0)	41 (21.5)	11 (42.3)	0.027*
Severe anaemia	30 (13.8)	22 (11.5)	8 (30.8)	0.014*
Birth asphyxia	17 (7.8)	12 (6.3)	5 (19.2)	0.038*
Malaria	11 (5.1)	10 (5.2)	1 (3.8)	1.000
IDM	11 (5.1)	11 (5.8)	0 (0.0)	0.368
TTN	11 (5.1)	11 (5.8)	0 (0.0)	0.368
HIV exposed	11 (5.1)	8 (4.2)	3 (11.5)	0.131
Apnea	8 (3.7)	2 (1.0)	6 (23.1)	<0.0001*
Congenital abnormalities	6 (2.8)	5 (2.6)	1 (3.8)	0.596
NEC	5 (2.3)	5 (2.6)	0 (0.0)	1.000
Bleeding disorder	4 (1.8)	1 (0.5)	3 (11.5)	0.006*
Meningitis	4 (1.8)	2(1.0)	2 (7.7)	0.071
Birth trauma	3 (1.4)	2 (1.0)	1 (3.8)	0.319

IDM=Infants of diabetic mothers, TTN-Transient tachypnea of the newborn, NEC=Necrotizing enterocolitis

Outcome of premature babies according to socio-demographic and clinical variables

There was statistical significance in the outcome of premature babies with regards to APGAR score (P=0.005), time of commencement of feeds (P=0.021), temperature at presentation (P=0.009) and mode of delivery (P< 0.0001). There was no significant association in the outcome of premature babies with regards to sex and birth orders of the babies, Table V.

Table V: Outcome of preterm babies according to socio-demographic and clinical variables

Variables	Outcome		P value
	Discharged, n=191 (%)	Died, n=26 (%)	
Sex			
Male	91 (47.6)	9 (34.6)	0.211
Female	100 (52.4)	17 (65.4)	
Birth order			
1st	76 (39.8)	14 (53.8)	
2nd	53 (27.7)	5 (19.2)	0.432
3rd	62 (32.5)	7 (26.9)	
APGAR score			
0 - 3	7 (3.7)	2 (7.7)	0.005*
4 - 6	7 (3.7)	5 (19.2)	
≥ 7	177(92.7)	19 (73.1)	
Commencements of feeds			
Day 1	51 (26.7)	13 (50.0)	0.021*
Day 2 and above	140 (73.3)	13 (50.0)	
Temperature at presentation(^{0}C)			
< 36	110 (57.6)	23 (88.5)	
36 – 37.5	68 (35.6)	3 (11.5)	0.009*
> 37.5	13 (6.8)	0 (0.0)	
Mode of delivery			
SVD	39 (20.4)	16 (61.5)	< 0.0001*
CS	152 (79.6)	10 (38.5)	

DISCUSSION

Prematurity is one of the commonest indications for admission in neonatal units as seen in the present study in which close to half (46.4%) of the neonates admitted into the neonatal unit of the Rivers State University Teaching Hospital were premature. A retrospective cross-sectional study in Nnewi, [15] Nigeria showed that 62.6% of preterm babies delivered were admitted into the neonatal unit. This is not surprising as prematurity is a major problem associated with high morbidity and mortality. The prevalence in the present study was comparable with the 32.86% reported in Maiduguri, north-eastern Nigeria [11] but much higher than the 28.25%, 26.5%, 24%, 24% and 16.4% observed in India, [16] Cameroun, [17] Bayelsa [10] (Nigeria), Ethiopia [18] and Nepal [19] respectively. This varying prevalence of prematurity among neonates admitted into the various neonatal units could be attributed to geographic and ethnic

differences, varying maternal risk factors for prematurity as well as differences in the study designs and inclusion criteria.

There was female preponderance in the present study with a M:F ratio of 1:1.2. This trend was also observed in Warri [20] (Nigeria), Ghana [21] and India. [22,23] In contrast, other studies in Nigeria [9-11,15,24] Cameroon, [17] Ethiopia, [18] Nepal [19] and Kenya [25] documented male preponderance. The reason for this difference could not be ascertained.

More than two-thirds (74.7%) of the preterms admitted in RSUTH were delivered via Caesarean section. There were similar observations in Nnewi [15] and Lagos, [26] Nigeria. The study by Waguru et al [25] in Kenya and Olugbenga et al [27] in Ilorin (Nigeria) corroborates the present study in which delivery via Caesarean section was significantly associated with preterm births. It is important to state that Caesarean section has no direct relationship with preterm births, but rather may be indicated in the management of maternal or fetal complications that may arise during pregnancy. The contrary was however observed in Enugu [9] (Nigeria), Ethiopia, [18] Nepal, [19] Ghana [21] and Kenya [25] where vaginal delivery predominated. This difference could be attributable to the varying maternal and fetal risk factors, varying standard operating procedures in the various health facilities as well as cultural/religious acceptance of the mode of delivery.

Moderate to late premature babies predominated (74.7%) while the extreme premature babies were the least (3.7%). This trend was the case in other parts of Nigeria, [9,15] Ethiopia, [18] Nepal, [19] Ghana, [21] Kenya [25] and India. [28] This was however in line with the global report on prematurity in which preterms delivered at GA 32-36 weeks accounted for about 84% of cases whereas preterms delivered at GA < 28 weeks accounted for only 5% and those delivered at 28-32 weeks, 10%. [29] The very low prevalence of extreme premature babies could be because of their higher still birth rates as compared with those of very and moderate-late preterm groups.

The commonest pregnancy complications seen in mothers of premature babies was hypertension in pregnancy (41.7%) followed by premature rupture of membranes (34.8%), diabetes in pregnancy (14.4%) and peripartum pyrexia (14.4%). Hypertension in pregnancy was also documented as the commonest pregnancy complication by Gabreslasie [30] in Ethiopia, Akintayo et al [7] in Ekiti state, south west Nigeria and Philip & Thomas [28] in India. Gabreslasie [30] and Waguru et al [25] reported that women with hypertension in pregnancy were five times more likely to deliver preterms than those without hypertension. Other studies [26,31-33]documented significant association of maternal hypertension in pregnancy with preterm birth outcomes. It is worthy of note that hypertension during pregnancy affects the placental blood flow leading to antenatal and perinatal hypoxia with poor fetal growth and obstetric emergencies necessitating preterm deliveries. Contrary to the present study, Kunle-Olowu et al [10] in Bayelsa, south-south Nigeria, Ayele et al [18] in Ethiopia and Paudel et al [19] in Nepal reported premature rupture of membranes as the commonest pregnancy complication while Kuppusamy & Vidhyadevi [16] and Bansal et al [22] in India reported maternal anaemia as the commonest pregnancy complication. Shrestha et al [34] in Nepal documented inadequate antenatal care as the commonest risk factor followed by maternal age less than 20 years and antepartum haemorrhage. These varying pregnancy complications could be because of the varying geographic locations and varying inclusion criteria.

Although the present study found that mothers who were HIV positive had more premature babies than those who had a negative status, the difference was not statistically significant. This increased risk of preterm births in HIV positive mothers has also being reported in other studies. [35,36] Butali et al [26] however did not find an

increased risk of premature birth in HIV positive mothers when compared to HIV negative mothers, the reason being that the increasing availability, awareness and use of antiretroviral medications for prophylaxis and treatment during pregnancy may have reduced drastically its' impact on pregnancy outcomes.

Multiple pregnancies, late antenatal booking, PHC as place of antenatal care and the presence of pregnancy complications were significantly associated with prematurity. Thus prematurity should be anticipated in the presence of these factors. Mothers with multiple pregnancies were significantly more likely to have preterm babies than mothers with singleton gestation in the present study. Waguru et al [25] and Etuk et al [37] reported that twin pregnancies conferred nearly a 4fold increase in the risk of preterm births. This is because multiple pregnancies are associated with uterine over distension leading to premature stimulation of uterine contractions. It is also associated with adverse maternal outcomes such as increased rates of pre-eclampsia, pregnancy-induced hypertension, maternal anaemia and venous thromboembolism which may lead to earlier deliveries. [29]

Neonatal jaundice (58.5%) was the commonest morbidity observed in premature babies in RSUTH followed by respiratory distress (57.1%), probable sepsis (55.3%) and hypoglycaemia (24.0%). Iyoke et al [9] in Enugu, Nigeria and Bansal et al [22] in India documented a similar pattern with neonatal jaundice being the commonest morbidity followed by sepsis and respiratory distress. In contrast, Paudel et al [19] and Shrestha et al [34] in Nepal reported sepsis as the commonest morbidity observed whereas Ayele et al [18] and Adbul-Mumin et al [21] in Ethiopia and Ghana respectively reported hypothermia as the commonest morbidity followed by respiratory problems. Kunle-Olowu et al [10] in Bayelsa, Nigeria reported respiratory problems as the commonest morbidity observed followed by neonatal jaundice and sepsis. These different morbidities could be attributable to the varying geographic locations and risk factors/pregnancy complications.

Of 217 preterm babies studied, 191(88.0%) were discharged home with a mortality rate of 12%. The 88.0% overall survival rate in the present study was higher than the 79.4%, 75.3%, 65.9%, 62.1% and 60.73% reported in Nepal, [19,35] Bayelsa [10] Nigeria, Ethiopia [18] and Ghana [21] respectively but lower than the 95% in a centre in India. [23] In the present study, the mortality rate increased with decreased gestational age (GA) and birth weights of the babies.

The mortality rate of 75% observed in preterms < 28 weeks GA in the present study was lower than the 88.9% and 80% reported in Bayelsa, [10] Nigeria and Ghana [21] respectively. The increased survival rate with increasing gestational age seen in the present study was also observed in Ethiopia, [18] Nepal, [19] and Ghana. [21] Gestational age is thus a key factor in the survival of premature babies. This is because the lower the gestational age the more immature the lungs and the more likely the requirement for surfactant therapy with respiratory support which is usually unavailable in resource poor settings and when available, it could be out of reach due to its' high cost. In contrast, survival of the extreme preterm babies has continued to improve in developed countries achieving up to 80% survival rates. [38-41]

The very high mortality rate of 87.5% in preterm babies < 1kg was comparable with the 85.7% and 80% documented in Ghana [21] and Nepal [34] respectively but lower than the 100% in a centre in India. [22] This is supported by findings in the present study which showed that preterms with birth weights < 1kg and 1-1.49kg were significantly more likely to die compared to preterms with birth weights 1.5-2.49kg and ≥ 2.5kg. This very high mortality reported in the extreme low birth weight babies in low- and middle- income countries could be because of the weak health care systems with poor technological advancements (lack of respiratory supports,

surfactant therapy, mechanical ventilators) leading to poor quality of care.

There were significantly more deaths in preterm babies with respiratory distress, hypoglycaemia, severe anaemia, birth asphyxia, apnea and bleeding disorders in the present study. Thus a high index of suspicion is needed with early diagnosis and prompt treatment to reduce morbidity and mortality. Abdul-Mumin et al [21] in Ghana also documented that preterms with respiratory distress syndrome, hypoglycaemia, jaundice and hypothermia were significantly more likely to die than preterms without these conditions. Similarly, McGil Ugwu, [20] Bansal et al [22] and Shrestha et al [34] reported respiratory distress and sepsis as the commonest causes of mortality whereas, Ayele et al [18] in Ethiopia reported sepsis, anaemia and respiratory problems as the highest causes of mortality in preterm babies.

Preterms with low Apgar score (0-3 and 4-6) were significantly more likely to die than preterms with normal Apgar score (≥ 7). This was also observed in Ethiopia [18] and India. [28] Another study in Kenya [25] showed that neonates with increase in Apgar score had better survival.

In the present study, preterms who were commenced on feeds (breastmilk) on the first day of life were significantly more likely to die when compared to preterms who commenced by the 2nd day and above. This could be attributed to the possible predisposition of early commencement of feeds to necrotizing enterocolitis (NEC) especially in sick preterms. In addition, parenteral nutrition which is ideal especially for the extreme premature babies is either unavailable or unaffordable in low- and middle- income countries.

Preterms who presented with hypothermia were observed to be significantly more likely to die when compared with preterms with normal or high temperatures in the present study as also observed in Ghana. [21] Other studies have also found a correlation between lower admission temperature and mortality in preterm babies. [42,43] It is worthy of note that admission temperatures in premature babies are inversely associated with mortality and morbidity. This is because hypothermia complicates much comorbidity in premature babies such as hypoglycaemia, sepsis, respiratory distress syndrome, necrotizing enterocolitis and bronchopulmonary dysplasia. This pattern was observed also by Lyu et al. [42] It is therefore important to keep preterm babies warm at all times.

CONCLUSION

Prematurity is a significant health problem as demonstrated in the present study, responsible for almost half (46.4%) of admissions in the neonatal unit. The commonest pregnancy complications in mothers of premature babies were hypertension in pregnancy and premature rupture of membranes while the commonest morbidities in preterms were neonatal jaundice, respiratory distress and probable neonatal sepsis. Multiple pregnancies, late ANC booking, PHC as place of booking and presence of pregnancy complications were significantly associated with prematurity. The overall survival of premature babies delivered in RSUTH was 88.0% and this was significantly associated with preterm deliveries occurring at higher gestational age and birth weights.

Factors significantly associated with poor outcomes in premature babies were respiratory distress, hypoglycaemia, severe anaemia, birth asphyxia, apnea and bleeding problems. Others were low Apgar score, time of commencement of feeds, temperature at presentation and mode of delivery.

Prematurity can thus be prevented by early diagnosis and prompt treatment of complications in pregnancy and strengthening of the health care system in low- and middle-income countries with improved technological advancement aimed at improving survival rates especially in the extreme preterm group.

ACKNOWLEDGEMENT

We acknowledge all the research assistance and staff of the special care baby unit of the Rivers State University Teaching Hospital for their support during the period of study. We also thank the parents/ caregivers who gave consent to carry out the study.

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How to cite this article: Awoala WB, Grace OT. Clinical outcome of premature babies admitted in the neonatal unit of a Tertiary Hospital in Port Harcourt. *Int J Health Sci Res.* 2021; 11(2): 60-71.

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