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Original Article

Pattern of Preterm Admissions and Associated Outcomes in a Faith Based Secondary Health Facility in Nigeria.

Authors: Sophia B Ishola[1], Iyabode OF Dedeke[2], Eloho P Hambolu[1], Oluwatosin H Adisa[1]

[1]Department of Family Medicine Sacred Heart Hospital, Abeokuta, Ogun State

[2]Department of Paediatrics Federal Medical Centre, Abeokuta, Ogun State/Sacred Heart Hospital, Lantoro, Abeokuta

Author of Corresponding:

Dr Sophia B Ishola

Department of Family Medicine Sacred Heart Hospital, Abeokuta, Ogun State

E- mail: sophiabukky@gmail.com.

ABSTRACT

Background

Preterm birth (<37 weeks gestation) is a leading cause of neonatal morbidity and mortality, particularly in low- and middle-income countries. South Asia and sub-Saharan Africa account for the majority of cases, and Nigeria contributes significantly to the global burden. Preterm infants face severe complications, especially in resource-limited settings. Faith-based Hospitals play important roles in maternal and newborn care yet published data from these facilities remain sparse.

Objectives

The study aims to describe the pattern and outcomes of preterm admissions in a faith-based secondary hospital in South-West Nigeria.

Subjects and methods

A six-month retrospective study was conducted at a faith-based hospital in Abeokuta, Nigeria. Preterm infants (<37 weeks, <2000 g) with complete records were included. Data on maternal, delivery, and neonatal characteristics, comorbidities, and outcomes were obtained from the unit records. Analysis was performed using SPSS, with logistic regression used to identify predictors of mortality ($p < 0.05$).

Results

Of the 425 admissions, 109 (25.6%) were preterm. Most (89%) were admitted within 72 hours, with a median age of 3 hours. The majority were singletons (75.2%), caesarean deliveries (52.3%), and born to mothers <35 years (72.5%). Common diagnoses included uncomplicated prematurity (39.4%), sepsis, and jaundice. The discharge rate was 70.6%, while mortality was 15.6%. Delayed admission ($p = 0.03$), outborn status ($p < 0.01$), and lower gestational age were significant predictors of mortality. Respiratory support was protective (OR = 0.097, $p < 0.001$)

CONCLUSIONS

Delayed care and outborn status heightened preterm mortality. Strengthening recognition of risk factors for prematurity and access to quality neonatal services is essential in low-resource settings.

Keywords: preterm birth, neonatal outcomes, faith-based hospital, LMICs, Nigeria

INTRODUCTION

Preterm birth, defined by the World Health Organization (WHO) as delivery before 37 completed weeks of gestation, remains a leading cause of neonatal morbidity and mortality globally and particularly in low- and middle-income countries (LMICs).[1] Preterm birth is still a key factor in child deaths and reflects the quality of care mothers and newborns receive.[2] According to a study by Chawanpaiboon et al,[2] approximately 10.6% of all live births globally in 2014 were preterm, amounting to an estimated 14.84 million preterm births. Notably, over 80% of these occurred in South Asia and sub-Saharan Africa, underscoring the disproportionate burden borne by low- and middle-income regions. Furthermore, evidence from selected high-income and upper-middle-income countries indicates a rising trend in preterm birth rates, highlighting a growing global health concern.[2] Nigeria is among the top contributors to the global burden of preterm births, with an estimated preterm birth rate of 153 per 1000 live birth higher than the 93 per 1000 live birth reported in Nepal.[3,4]

Prematurity is associated with serious complications and may sometimes lead to long-term neurodevelopmental impairments among survivors.[5,6] Despite notable advancements in neonatal care, the prognosis for preterm infants in resource-limited settings like Nigeria remains poor, largely due to socio- cultural barriers and persistent health- system building block deficiencies which negatively impacts access, utilization and quality care[7-12] Specific factors may however vary across countries. Inadequate utilization of antenatal care services, high rates of home deliveries, and births occurring in poorly equipped facilities have been reported as in-country specific factors.[3] Faith-based, hospitals provide a wide range of maternal and newborn care services across primary to tertiary- level healthcare in resource-limited settings, however, published data on neonatal outcomes within faith-based secondary facilities remain sparse.

This study aims to describe the pattern and outcomes of preterm admissions at a faith-based secondary hospital in South-West Nigeria.

SUBJECTS AND METHODS

Study location

The study was conducted at the Sacred Heart Hospital, a faith-based secondary health facility in Abeokuta, South-West Nigeria. The hospital serves as a referral center for multiple primary and other secondary healthcare facilities in the region and operates a special care baby unit (SCBU). The SCBU has an admission capacity of 30 cots and 5 incubators and is staffed by two Pediatricians and trained neonatal nurses with an average nurse-to-patient ratio of approximately 1:5–1:6. Available neonatal support services include incubators, radiant warmers, oxygen therapy (via nasal prongs and bubble Continuous Positive Airway Pressure (CPAP). Kangaroo Mother Care (KMC) is routinely practiced for clinically stable preterm and low birth weight infants, as a step-down care approach. Both in- and out- born preterm neonates who weigh < 2000 g are routinely admitted for specialised care.

Study design

A retrospective hospital-based descriptive study conducted over a 6-month-period from March 2024 to August 2024.

Study population

All preterm infants (gestational age <37 completed weeks) admitted to the SCBU during the study period with complete clinical records were included in the study. Preterms with major congenital anomalies incompatible with life, whose gestational age could not be determined—either due to late presentation, absence of reliable antenatal dating, or missing documentation—were excluded.

Sample size

The sample size consisted of all eligible preterm infants admitted to the SCBU within the specified study timeframe, based on a total population sampling approach.

Ethical consideration

Ethical approval for the study was obtained from the Research and Ethics Committee of Sacred Heart Hospital prior to commencement (SHH/EC/EA/02/05/25). Given the retrospective nature of the study and the use of existing hospital records, the requirement for informed consent was waived by the ethics committee. To ensure confidentiality, all data were de-identified at the point of extraction and each participant was assigned a unique study code. Data were stored in password-protected electronic files accessible only to the research team. No personal identifiers were included in the analysis or reporting of findings.

Data collection

Data was retrieved from SCBU registers and patients' case folders using a structured proforma developed based on relevant literature and study objectives. The tool was pilot tested for clarity and consistency prior to full data extraction. Maternal demographic variables included maternal age at delivery, categorized as ≤20 years, 21–30 years, 31–40 years, and >40 years. Parity was classified as nulliparous (para 0), primiparous (para 1), multiparous (para 2–4), and grand multiparous (para ≥5).

Delivery-related variables included gestational age at birth and categorized according to WHO classification into extremely preterm (<28 weeks), very preterm (28–31 weeks), and moderate to late preterm (32–36 weeks). Mode of delivery was recorded as spontaneous vaginal delivery or caesarean section. Place of delivery was categorized as inborn (within the facility) or out-born when referred from another facility, home delivery, or other locations. Neonatal characteristics included sex, small for gestational age (SGA) and birth weight which was categorized as extremely low birth weight (ELBW: <1000 g), very low birth weight (VLBW: 1000–1499 g), low birth weight (LBW: 1500–2499 g), and normal birth weight (≥2500 g- < 4000g).

Neonatal morbidities documented included jaundice, neonatal sepsis, birth asphyxia, respiratory distress syndrome (RDS), hypoglycemia, transient tachypnoea of the newborn (TTN), congenital pneumonia, and hypothermia. Other neonatal variables included were length of hospital stay and outcome at

discharge, categorized as discharged, left against medical advice (LAMA), referred, or died.

Data analysis

Data were entered into Google Forms, exported to Microsoft Excel, and analyzed using IBM SPSS Statistics. Categorical variables were summarized using frequencies and percentages, while continuous variables were summarized as median with interquartile range (IQR) due to their non-normal distribution.

The Chi-square test (or Fisher's exact test where appropriate) was used to assess associations between categorical variables. Multivariate logistic regression analysis was performed to identify independent predictors of outcomes among preterm infants. Variables with $p < 0.20$ at bivariate analysis were included in the regression model. Statistical significance was set at $p < 0.05$ with a 95% confidence interval.

RESULTS

During the study period, 425 neonates were admitted into the SCBU, of which 109 (25.6%) were preterm. Table I presents the sociodemographic characteristics of the preterm neonates and their mothers. The majority (97; 89%) of preterm infants were admitted within 72 hours of birth. The median (IQR) age at admission among those admitted within 72 hours was 3.0 (4.0) hours, while for those admitted after 72 hours, the median (IQR) age at admission was 7.0 (8.0) days.

There was a nearly equal gender distribution, with 56 (51.4%) males and 53 (48.6%) females. Most (82; 75.2%) preterm infants were from singleton gestations and were delivered via caesarean section (57; 52.3%). A majority (79; 72.5%) of mothers were younger than 35 years, and most (71; 65.1%) had parity between 2 and 4.

About two-third (67; 61.5%). of the preterm neonates were late preterm (34–36 weeks) and most neonates (65; 59.6%) had a birth weight between 1500 and 2499 g, while only a small proportion (6; 5.5%) were extremely low birth weight (<1000 g). More than half (63; 57.8%) of the preterm neonates were delivered within the study facility (inborn), while 46 (42.2%) were delivered outside the facility, including eight (7.3%) home deliveries. (Table 1)

Table I: Sociodemographic characteristics of preterm babies and their mothers

Variable	Category	Numbr	Percentage
Age at admission	≤72 hours	97	89
	>72 hours	12	11
Gender	Male	56	51.4
	Female	53	48.6
Type of gestation	Singleton	82	75.2
	Multiple	27	24.8
Mode of delivery	Vaginal	52	47.7
	Caesarean section	57	52.3
Maternal age	< 35 years	79	72.5
	>=35 years	30	27.5
Parity	1	33	30.3
	2-4	71	65.1
	>=5	5	4.6
Gestational age	<28 weeks	4	3.7
	28-<32 weeks	20	18.3
	32-<34 weeks	18	16.5
	34-36 weeks	67	61.5
Weight on admission (g)	<1000	6	5.5
	1000-1499	20	18.4
	1500-2499	65	59.6
	>=2500	18	16.5
Place of delivery	In born	63	57.8
	Outborn	46	42.2

The most common indication for admission was prematurity without associated comorbidities, accounting for 43 (39.4%) cases (Table II). Among the 66 (60.6%) preterms with

comorbidities, neonatal sepsis (27; 24.8%) and jaundice (17; 15.6%) were the most frequent comorbidities. Forty-one neonates (43.6%) received KMC and 37 (39.4%) received respiratory support (oxygen therapy or CPAP).

Table II: Indications for admission

Category	Frequency*	Percentage (%)
No other comorbidities	43	39.4
Sepsis	27	24.8
Jaundice	17	15.6
Respiratory distress	16	14.7
Hypoglycaemia	14	12.8
Asphyxia	11	10.1

*Some neonates had multiple comorbidities

Most (77; 70.6%) of the preterm neonates were discharged alive and while mortality occurred in 17 (15.6%) cases (Figure 1), 11% left against medical advice (LAMA). Nine (52.9%) of the 17 preterm neonatal deaths recorded, had documented comorbidities, with neonatal sepsis being the most frequently observed condition, occurring either alone or in combination with other morbidities in four cases (23.5%) which included respiratory distress syndrome (RDS), birth asphyxia, and hypoglycaemia.

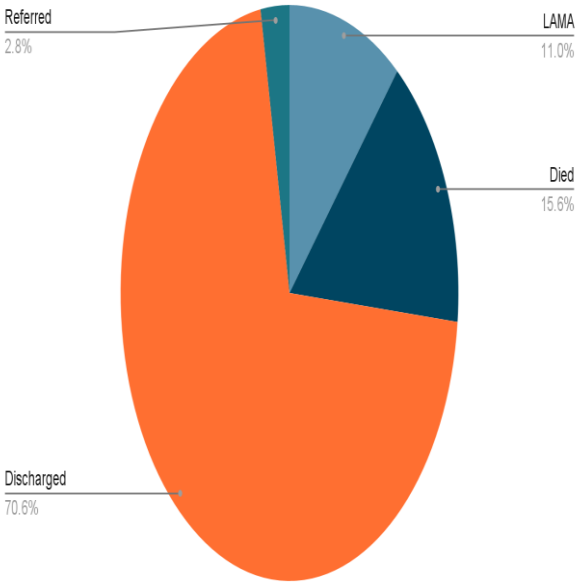

Figure 1: Outcome of preterm admissions

Over half of the deaths (9; 52.9%) occurred among VLBW infants while preterm mortality was more frequent in babies admitted after 72 hours, those delivered vaginally, infants of primiparous mothers, and those with gestational age under 28 weeks or birth weight below 1000 g. Mortality was also higher among outborn neonates, those who received respiratory support, and those who did not receive KMC (Table III).

Table III: Sociodemographic and clinical factors associated with preterm deaths (n=94)

Variable	Category	Discharged alive	Dead	Statistics (Chi square; p value)
Age at admission	≤72 hours	73 (84.9)	13 (15.1)	0.03*
	>72 hours	4 (50.0)	4 (50.0)	
Gender	Male	36 (78.3)	10 (21.7)	0.81;0.37
	Female	41 (85.4)	7 (14.6)	
Type of gestation	Singleton	58 (81.7)	13 (18.3)	1.00*

	Multiple	19 (82.6)	4 (17.4)	
Mode of delivery	Vaginal	27 (67.5)	13 (32.5)	0.003*
	Caesarean section	50 (92.6)	4 (7.4)	
Maternal age	< 35 years	51 (77.3)	15 (22.7)	0.09*
	>=35 years	26 (92.9)	2 (7.1)	
Parity	1	19 (65.5)	10 (34.5)	0.031*
	2-4	53 (88.3)	7 (11.7)	
	>=5	5 (100)	0	
Gestational age	<28 weeks	1 (33,3)	2 (66.7)	0.001*
	28-<32 weeks	11 (61.1)	7 (38.9)	
	32-<34 weeks	9 (75.0)	3 (25.0)	
	34-36 weeks	56 (91.8)	5 (8.2)	
Weight on admission (g)	<1000	1 (25.0)	3 (75.0)	<0.001*
	1000-1499	7 (43.8)	9 (56.2)	
	1500-2499	52 (91.2)	5 (8.8)	
	>=2500	17 (100)	0	
Place of delivery	In born	55 (93.2)	4 (6.8)	<0.001*
	Outborn	22 (62.9)	13 (37.1)	
KMC coverage	Yes	38 (92.7)	3 (7.3)	0.03*
	No	39 (73.6)	14 (26.4)	
Use of respiratory support	Yes	24 (63.2)	14 (36.8)	<0.01*
	No	53 (94.6)	3 (5.4)	

*****Fisher's exact test applied

On bivariate logistic regression analysis exploring factors associated with mortality among preterm neonates (Table IV). Neonates aged ≤72 hours had higher odds of mortality compared to those >72 hours (OR = 5.62, p = 0.025). Caesarean section delivery was associated with lower odds of death compared to vaginal delivery (OR = 0.17, p = 0.004), and inborn babies had about 87.7% lower odds of mortality compared to outborn babies (OR = 0.12, p < 0.001). Gestational age was significantly associated with mortality (p = 0.009). Compared with 34–36 weeks, neonates born at 28 weeks (OR = 22.4, p = 0.018) and 28–<32 weeks (OR = 7.13, p = 0.003) had significantly higher odds of death, while 32–<34 weeks group did not differ significantly (OR = 3.73, p = 0.106).

Respiratory support (oxygen or CPAP) was strongly protective; neonates who received it had substantially lower odds of death compared with those who did not (OR = 0.097, p < 0.001). Similarly, receipt of KMC was significantly associated with improved survival, as neonates who received KMC had higher odds of survival compared to those who did not receive KMC (OR = 4.55, p = 0.025). Parity and birth weight category were both significantly associated with neonatal mortality (p = 0.048 and p = 0.001, respectively); however, the individual category estimates were unstable, with large standard errors and evidence of model separation, making the odds ratios unreliable for interpretation.

Table IV: Bivariate logistic regressions on factors associated with preterm deaths

Independent variable	**Unadjusted OR**	**p-value**	**95% CI**
Age at admission (Ref ≤72 hrs)	5.615	0.025	1.245-25.325
Mode of Delivery (ReVaginal)	6.019	0.004	1.787-20.274
Place of Delivery (reference outborn)	0.123 (0.036-0.419)	<0.001	0.067 (0.006-0.701)
Weight Category (g) {Ref > 2500}			
< 1000	4846423271	0.998	0.000
1000-1499	2077038545	0.998	0.000
1500-2499	155334079.2	0.998	0.000
Parity(Ref Grand multiparity ≥ 5)	–	–	4.085
Primiparity	850249072.2	0.999	0.000
Multiparity	213364389.8	0.999	0.000
Gestational Age (weeks) Ref 34-36}			
< 28	22.400	**0.018**	1.716-292.343
28- < 32	7.127	**0.003**	1.909-26.605
32-<34	3.733	0.106	0.757-18.400
Had respiratory support (Ref No)	0.097	<0.001	0.025-0.369
Had KMC (Ref No)	4.549	0.025	1.209-17.099

In multivariable logistic regression analysis (Table V), gestational age and KMC, and respiratory support were independently associated with neonatal mortality. Neonates born at 28–<32 weeks had significantly higher odds of death compared to those born at 34–36 weeks (AOR = 56.24, p = 0.008), while other gestational age Receipt of respiratory support (oxygen or CPAP) was significantly protective, reducing the odds of death by approximately 97% (AOR = 0.027, p = 0.006).

categories showed elevated but non-significant associations. KMC was strongly associated with improved survival; neonates who received KMC had significantly higher odds of survival compared to those who did not (AOR = 70.83,p = 0.002)

Table V: Multivariate Logistic Regressions on Factors Associated with Preterm Deaths

Independent variable	Adjusted odds ratio	p-value	95% CI
Age at admission (Ref ≤72 hrs)	8.824	0.158	0.438-162.191

Mode of Delivery (Ref Vaginal)	1.677	0.627	0.209-13.465
Place of Delivery (reference outborn)	0.123 (0.036-0.419)	**<0.001**	0.067(0.006-0.701)
Gestational Age (weeks) {Ref 34-36}			
< 28	16.497	0.393	0.026-10309.156
28-<32	56.243	**0.008**	2.870-1102.132
32-<34	16.551	0.060	0.884-309.943
Had respiratory support (Ref No)	0.097	**0.006**	0.002-0.361
Had KMC (Ref No)	70.825	**0.002**	4.764-1052.948

DISCUSSION

The high proportion of admissions occurring within 72 hours of birth may indicate relatively early care-seeking for preterm infants. However, in this setting, compared to reports from other parts of Nigeria and Ghana,[13,14] it is more likely reflective of the large number of inborn preterm deliveries managed within the facility, rather than evidence of a consistently efficient referral system. This pattern may, however, obscure delays among outborn infants, who often encounter barriers such as transportation difficulties, weak referral systems, and financial constraints before accessing care.[15] Nonetheless, early presentation remains critical, as timely medical intervention plays a key role in improving outcomes among preterm neonates.[16] The near-equal gender distribution in our cohort aligns with other data, implying no overall sex-based predisposition to preterm birth.[17–19] However, regional studies reveal contrasting patterns: in White European populations, male fetuses show a higher risk of spontaneous preterm birth- both with intact membranes and after preterm premature rupture of membranes- and greater neonatal morbidity,[20] whereas a large sub-Saharan African analysis found that female fetuses carried an 8 % higher adjusted odds of preterm birth (AOR = 1.08; 95 % CI 1.03–1.15) compared with males.[21]

Singleton gestations were predominant in our cohort, despite evidence from larger studies indicating a significantly higher prevalence of preterm birth among multiple pregnancies—where rates reach 54.9% in twins and 94.5% in triplets, compared to just 6.7% in singletons (OR: 17.79; 95% CI: 17.51–18.09).[22] While caesarean deliveries slightly outnumbered vaginal births in our setting, literature suggests that caesarean section is common among preterm deliveries and is associated with reduced odds of fresh stillbirth and perinatal death, particularly in extremely preterm infants (<28 weeks), though it may increase the likelihood of neonatal intensive care unit admission.[23,24] The higher rate of cesarean sections may reflect obstetricians' preference for surgical delivery in high-risk pregnancies to optimize neonatal outcomes. The finding that most mothers were below 35 years of age and multiparous is consistent with reports from sub-Saharan African settings showing that maternal age and parity significantly influence preterm birth outcomes. Studies from Nigeria,[3] Kenya,[25] and Ghana[26] have reported that women aged 21–35 years and those with parity between 2 and 4 constituted most mothers with preterm deliveries. Otieku et al.[26] in Ghana observed that maternal age, parity, and gravidity were important determinants of preterm birth, with increased vulnerability among primiparous and grand multiparous women. This vulnerability among primiparous mother was corroborated by Adeoye et al.[27] in Nigeria. In Nigeria, Fajolu et al.,[3] and Awoyesuku et al.[26] also reported that preterm

births were common among multiparous women, and extremes of reproductive age and parity were associated with poorer maternal and neonatal outcomes. Awoyesuku et al.[26] further noted that women older than 35 years experienced higher rates of pregnancy complications and preterm delivery, emphasizing that advanced maternal age remains an important risk factor requiring closer antenatal surveillance, even though the majority of mothers in our study were younger than 35 years and none were below 20 years.

The predominance of late preterm infants (34–36 weeks) is consistent with broader regional trends, but its interpretation requires contextual nuance.[3,27] In our setting, late preterm births may reflect gaps in antenatal care quality, including suboptimal detection and management of maternal conditions such as hypertensive disorders, infections and poorly managed maternal complications.[3,28] Unlike high-income settings, where late preterm births are often linked to planned obstetric interventions.[29] The absence of detailed maternal clinical data in this study limits deeper exploration of these upstream determinants. A significant proportion of preterm admissions were due to prematurity without other comorbidities.

However, sepsis and jaundice were notable complications, reflecting the vulnerability of preterm neonates to infections and metabolic disorders. Respiratory distress and asphyxia were less frequent but remain critical conditions requiring specialized care.[18] The prominence of neonatal sepsis and jaundice observed in this study is consistent with findings from other studies conducted in similar low-resource settings. In Port Harcourt, Nigeria,[30] neonatal sepsis was among the leading causes of admission and mortality among preterm infants, emphasizing the role of perinatal infections and gaps in infection prevention practices. This pattern was further supported by Ochoga et al,[31] in Lagos, Nigeria, highlighting neonatal sepsis as a major contributor to morbidity and mortality, particularly among preterm and low birth weight infants. Similarly, in Ghana,[14] sepsis and jaundice were noted as common morbidities among preterm neonates, attributing these to both facility-level challenges and delays in care-seeking from the community. These studies collectively reinforce the notion that infections and related complications such as jaundice remain pervasive problems in sub-Saharan Africa, often linked to maternal infections, suboptimal antenatal care, and environmental factors affecting neonatal health. The overall mortality rate among preterm neonates in this study was 15.6%, which is lower than the 20-28.4% reported in tertiary hospitals in Nigeria.[31,32] This difference may reflect variations in healthcare capacity, case mix, and the level of neonatal support available across facilities. Importantly, this overall rate should be interpreted alongside the distribution of gestational age and birth weight, as deaths were more concentrated among extremely preterm and very low birth weight infants, particularly those weighing less than 1000 g, where survival remains especially challenging. Place of delivery was an important determinant of outcome in this study.

Preterm neonates delivered outside the study facility had poorer survival compared to those delivered within the hospital, a finding that is consistent with previous studies, although much of the available evidence is derived from cohorts of more immature preterm infants, particularly those born before 33 weeks' gestation.[33–35]

Despite differences in gestational age profiles, the observed pattern underscores the critical role of health system factors, including delays in referral, inadequate stabilization prior to transfer, and the lack of organized neonatal transport systems, all of which contribute to worse outcomes among outborn neonates. In many settings,[36,37] out-born infants are transported without appropriate thermal care, monitoring, or skilled personnel, increasing the risk of deterioration before arrival. In contrast, inborn neonates benefit from immediate access to care and earlier initiation of supportive interventions. Although admission beyond 72 hours of life was associated with worse outcomes, the broader implication is the importance of timely access to appropriate neonatal care. Early recognition, prompt referral,

and rapid initiation of treatment remain critical for improving survival among preterm infants. The faith-based context of the hospital may also have influenced outcomes. Such facilities often emphasize patient-centered and community-oriented care, which may enhance caregiver engagement and acceptance of interventions like KMC. At the same time, reliance on out-of-pocket payments and limited access to advanced neonatal technologies may constrain the scope of care available, particularly for extremely preterm infants. In terms of clinical interventions, both respiratory support and KMC were associated with improved survival as previously reported in literature.[38,39]

This underscores the value of relatively low-cost, evidence-based interventions in resource-limited settings, where access to advanced neonatal intensive care may be restricted. However, these associations should be interpreted cautiously, as differences in illness severity and selection of patients for these interventions may influence outcomes. Gestational age remained the strongest predictor of mortality, with markedly increased risk of death among infants born before 32 weeks. This finding is consistent with evidence from a large multicentre Nigerian analysis, which demonstrated a stepwise increase in mortality risk with decreasing gestational age, particularly among infants born at 28–<32 weeks and below. [3] The observed gradient reflects the progressive physiological immaturity associated with earlier gestations and underscores the disproportionate contribution of very preterm births to neonatal mortality. In low-resource settings, this risk is further amplified by limited access to advanced neonatal care, highlighting persistent gaps in the management of very preterm infants.

IMPLICATIONS FOR PRACTICE AND POLICY

This study highlights several actionable priorities within faith-based and similar healthcare settings. Strengthening referral systems is essential, as the adverse outcomes observed among outborn neonates point to systemic gaps in early identification, stabilization, and timely transfer of high-risk infants. Addressing these challenges will require the development of structured referral pathways, investment in functional neonatal transport systems, and improved communication between referring and receiving facilities. In addition, the demonstrated benefits of KMC and basic respiratory support underscore the need to scale up these cost-effective interventions. Faith-based facilities are particularly well-positioned to promote KMC through strong community engagement and culturally sensitive care models, although sustained training and adequate resource allocation are necessary to support implementation. Beyond facility-level interventions, improving outcomes also depends on addressing upstream determinants of preterm birth. Strengthening antenatal care services, particularly through routine screening and management of maternal conditions such as hypertension, infections, and other risk factors—alongside community-based outreach, could reduce the incidence of preterm delivery. Furthermore, there is a need to better integrate faith-based hospitals into the broader health system. Strengthening partnerships with government health services could enhance funding stability, improve supply chains, and expand access to specialized neonatal care, ultimately contributing to better survival outcomes for pre-term infants.

Limitations

The retrospective design of this study limited the availability of detailed clinical and maternal information, particularly with respect to antenatal care utilization, socioeconomic status, and maternal comorbidities. As a result, the ability to comprehensively examine upstream determinants of preterm birth and their influence on neonatal outcomes was constrained. In addition, small sample sizes within certain subgroups contributed to unstable regression estimates, especially for variables such as birth weight and parity, thereby limiting the reliability and interpretability of these findings.

Furthermore, the study was conducted in a single faith-based hospital, which may restrict the generalizability of the results to other settings with

different patient populations and resource levels. However, this context also provides valuable insights into neonatal care within faith-based healthcare systems, a perspective that remains relatively underrepresented in literature.

CONCLUSION

Preterm neonatal outcomes in this setting reflect a complex interplay of clinical characteristics, health system limitations, and the distinct context of faith-based healthcare delivery. Survival is largely determined by gestational age as well as access to essential, evidence-based interventions such as KMC and respiratory support, which remain critical in resource-constrained environments.

Future research should extend beyond descriptive approaches to more thoroughly examine the contribution of maternal health factors, antenatal care utilization, and socioeconomic conditions to preterm outcomes. Comparative studies across faith-based, public, and private health facilities are also needed to better understand how variations in care models and resource availability influence survival. Strengthening collaboration between faith-based institutions and national health systems, alongside targeted investments in neonatal care capacity and referral systems, will be essential for improving outcomes among preterm infants in low-resource settings.

Authors' Contributions: SB: Conceptualization, Manuscript Writing and Revision, Final Approval IOF: Draft Writing, Data Analysis and Interpretation, Final Approval EH: Conceptualization, Manuscript Writing and Revision, Final Approval OH: Manuscript Writing and Revision, Final Approval.

Competing interests: We declare that we have no conflict of interest

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