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RESEARCH ARTICLE

Maternal and Newborn Morbidity in Federal Teaching Hospital Gombe, North-East, Nigeria

Bernard Terkimbi Utoo[1,*], Aliyu Usman El-Nafaty[2], Chris Emmanuel Nwobodo[3], Suleiman Yahya[3], Patrick Joseph Guzol[3], Bello Ahmadu[3], and Mamman Tijani[3]

ABSTRACT

Background: **Efforts are being made to promote mother and child survival by reducing the high rate of maternal and newborn morbidities in developing nations, particularly in sub-Sahara Africa. The study was designed to find the pattern and associated factors of maternal and newborn morbidities in Gombe, northeast Nigeria test.**

Materials and Method: **Patients were prospectively interviewed with the use of a structured questionnaire and medical case records were also reviewed. Data obtained was entered into SPSS version 21 for analysis.**

Results: **A total of 250 women were studied. Most (53.6%) were aged 26–35 years. The majority (97.2%) were married. Most (40.0%) were unemployed and of the Fulani ethnicity (36.4%). Urban dwellers were in the majority (55.2%). Approx. 78% had at least a secondary level of education. Most (64.4%) were multiparous, had 2 or more living children (72%), and 76% with less than 8 ANC visits. Distribution of MOD showed C/S (52.4%), SVD (36%), and Instrumental delivery (1.6%). Maternal morbidity was recorded in 22% with PPH (47.3%), Genital injury (30.5%), and Genital sepsis (16.4%) most common. Newborn morbidity was recorded in 23.6% with neonatal asphyxia (25.4%), neonatal jaundice (25.4%), and LBW (22%) most common. Women who had less than 8 ANC visits ($p = 0.05$) and underwent instrumental delivery ($p = 0.002$) were more likely to suffer morbidity. Those who had Caesarean Section were less likely to have a maternal morbidity ($p = 0.002$). Whereas, neonates born to primiparous women were more likely to suffer a morbidity ($p = 0.042$). There was no significant relationship between number of ANC visits ($p = 0.512$) and MOD ($p = 0.680$).**

Conclusion: **PPH, genital injuries, and genital sepsis were the commonest maternal morbidities while Neonatal asphyxia, jaundice, and LBW were commonest in the newborn. Less than eight ANC visits and instrumental delivery increased the likelihood of maternal morbidity, while delivery to primiparous mothers increased the likelihood of newborn morbidity. Campaign for adequate antenatal care clinic visits should be sustained and when indicated cesarean delivery should not be denied to women. Accouchers must be trained in the usage of instrumental deliveries to reduce morbidities associated with it.**

Keywords: Asphyxia, Genital sepsis, Newborn, Obstetric haemorrhage.

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[1]Department of Obstetrics and Gynaecology, Benue State University Teaching Hospital, Nigeria.
[2]Department of Obstetrics and Gynaecology, Gombe State University, Nigeria.
[3]Department of Obstetrics and Gynaecology, Federal Teaching Hospital Gombe, Nigeria.

**Corresponding Author:*
e-mail: bernardutoo@yahoo.com

1. Introduction

Over 90% of maternal and newborn deaths are said to occur in developing nations of the world [1], [2]. Most of these deaths occurred in low- and middle-income countries (LMICs) [1]. Sub-Saharan Africa had the highest maternal mortality ratio (MMR) in 2015, with an estimated 546 maternal deaths per 100,000 live births; the MMR for high-income countries (HICs) was an estimated 17 maternal deaths per 100,000 live births [1]. Similarly, mortality for children under age five years (MDG 4) declined by 49%, from 12.4 million in 1990 to 5.9 million in 2015, but still substantially short of the then-proposed 2015 target of a reduction by two-thirds, and the decline is much slower

for neonatal deaths [1]. It is pertinent to note that within countries, when the population is disaggregated by income, education, or place of residence, wide disparities in child mortality can be shown, even in those areas where the overall mortality seems low [1].

Nigeria a developing nation in sub-Sahara Africa has one of the worst maternal, newborn, and child mortality and morbidity indices. Her maternal mortality ratio is reported to be as high as 576 deaths per 100,000 live births, with worse figures in the north where reports of over 1000 deaths per 100,000 live births are documented [2]. Nigeria's infant mortality and under-5 mortality rates are estimated at 69 deaths per 1000 live births and 128 deaths per 1000 live births respectively [2].

For one mortality that occurs several morbidities and unfavorable outcomes would have taken place, some severe enough to jeopardize the life of the mother or newborn [3]. The number of such morbidities is striking: Every year, an estimated 10 million women who survive their pregnancies experience such unfavorable outcomes. There are global efforts to reduce maternal and perinatal deaths which are usually targeted at reducing the global maternal mortality ratio to less than 70 per 100,000 live births and neonatal mortality rate to less than 12 per 1000 live births by 2030 through the sustainable development goal [4]. Promotion of antenatal care service utilization and delivery where there is skilled birth attendance is one of the strategies adopted to reduce these morbidities [3].

Major morbidities such as obstetric hemorrhage, sepsis, eclampsia, genital injuries/prolapsed, etc., are said to occur in mothers; while complications from preterm births, neonatal sepsis, pneumonia, diarrheal, jaundice, hemorrhagic disease of newborn, asphyxia and other intrapartum related problems are the morbidities among babies [3]–[5]. Addressing stillbirths and neonatal mortality requires interventions across the continuum of care (preconception, antenatal, intrapartum, immediate postnatal period, and after) and interventions across the health system (family and community level, outreach, and clinical care or facility level) [1]. Significant proportions of these maternal, fetal, and newborn deaths are preventable [1].

The knowledge of these morbidities will enable healthcare practitioners to develop sustainable and integrated strategies to curb the trend in order to mitigate the already poor indices that confront our region of the world. This study was thus designed to identify the pattern of maternal/newborn morbidities and related factors in Federal Teaching Hospital Gombe, north-east, Nigeria.

2. Materials and Method

2.1. Study Type and Design

This was a prospective cross-sectional study in which patients who consented were interviewed with a structured questionnaire and their case records were also reviewed. This study was from March to June 2022.

2.2. Study Population

The study population was stable women who delivered within the first 72 hours and were in the postnatal ward.

2.3. Study Setting

The study was conducted at the Federal Teaching Hospital Gombe. This is a tertiary health facility that receives referred patients from different parts of the State and neighboring States in the north-eastern part of Nigeria. The facility has an annual delivery record of approximately 3000 in its maternity unit and is well-equipped and adequately manned by skilled birth attendants. There is an anesthesiology, laboratory, neonatal intensive care unit, and blood bank services backup.

2.4. Data Analysis

Data collected was entered into SPSS statistical software 21 for analysis.

Results are presented in the form of tables. Qui-square was used as a test of statistics with p-value <0.05 considered a significant value at a 95% confidence interval.

3. Results

A total of 250 women were studied. Most (53.6%) were aged 26–35 years. The majority (97.2%) were married. Most (40.0%) were unemployed and of the Fulani ethnicity (36.4%). Urban dwellers were in the majority (55.2%). Aproximately 78% had at least a secondary level of education (See Table I). Most (64.4%) were multiparous, had 2 or more living children (72%), and 76% with less than 8 ANC visits. Distribution of MOD showed C/S (52.4%), SVD (36%), and Instrumental (1.6%) (See Table II). Maternal morbidity was recorded in 22% with PPH (47.3%), Genital injury (30.5%), and Genital sepsis (16.4%) most common. Newborn morbidity was recorded in 23.6% with neonatal asphyxia (25.4%), neonatal jaundice (25.4%), and LBW (22%) most common (see Table III). Women who had less than 8 ANC visits ($p = 0.05$) and underwent instrumental delivery ($p = 0.002$) were more likely to suffer morbidity. Those who had Caesarean Section were less likely to have a morbidity ($p = 0.002$) (see Table IV). Whereas, neonates born to primiparous women were more likely to suffer a morbidity ($p = 0.042$). There was no significant relationship between the number of ANC visits ($p = 0.512$) and MOD ($p = 0.680$) (see Table V).

4. Discussion

Embarking on the journey of childbirth in developing nations of the world is one of the most risky ventures to undertake [5]. One of the strategies of making pregnancy safe and promoting clean and safe delivery is adequate attendance at antenatal clinics and delivery in a health facility with skilled birth attendants [5], [6]. Yet, it is reported that severe maternal morbidities do occur at the hospital facilities especially in developing nations [2], [3]. We find that an outrageous 22% of the women ($n = 250$) who delivered in our facility within the study period had morbidities. This is higher than the report of 5.1% in a secondary health facility in Akwa Ibom State, southern Nigeria [3]. Studies done by Utoo *et al.* reported 2.7% in Jos and 4.04% in Cross Rivers [6], [7]. Outside Nigeria, Zambia (4.2%), Niger Republic (6.45%), Senegal (7.5%),

TABLE I: Socio-Demographic Characteristics of Mothers

Variable	Frequency (n = 250)	Percentage (%)
Age		
15–25	74	29.6
26–35	134	53.6
36–45	42	16.8
Marital Status		
Married	243	97.2
Divorced	5	2
Single	2	0.8
Ethnicity		
Fulani	91	36.4
Tera	56	22.4
Tangale	19	7.6
Bolewa	17	6.8
Yoruba	12	4.8
Ibo	11	4.4
Waja	9	3.6
Others	35	14.0
Occupation		
Unemployed	100	40.0
Civil servants	39	15.6
Business	31	12.4
Petty trading	22	8.8
Farming	16	6.4
Students	16	6.4
Others	26	10.4
Area of Residence		
Urban	1138	55.2
Sub-Urban	65	26.0
Rural	47	18.8
Education		
None	18	7.2
Primary	36	14.4
Secondary	99	39.6
Tertiary	97	38.8
Religion		
Islam	160	64.0
Christianity	86	34.4
Traditional	4	1.6

TABLE II: Frequency Distribution of Obstetric Variables

Variables	Frequency (n= 250)	Percentage (%)
Parity		
Primipara	89	35.6
Multipara	161	64.4
No of living children		
1	70	28.0
≥2	180	72.0
Number of ANC visits		
<8	190	76.0
8	46	18.4
>8	14	5.6
Mode of Delivery		
SVD	115	46.0
C/S	131	52.4
Instrumental	4	1.6

TABLE III: Types of Maternal and Newborn Morbidities

Morbidity	Frequency (n = 250)	Percentage (%)
Maternal Morbidity		
Yes	55	22.0
No	195	78.0
Types of morbidity		
PPH	26	47.3
Genital tear	17	30.9
Genital sepsis	9	16.4
Mental disorder	2	3.6
Puerperal pyrexia	1	1.8
Newborn Morbidity		
Yes	59	23.6
No	191	76.4
Types of morbidity		
Neonatal asphyxia	15	25.4
Neonatal jaundice	15	25.4
LBW	13	22.0
Neonatal sepsis	4	6.8
Others	12	20.3

and Pakistan (4%) have been documented [3]. Our center is a referral facility where so many cases that are treated in other facilities with sometimes very little or no success are referred to. Again the absence of a clear definition for morbidities, cultural variations and lack of management guidelines/protocols may be responsible for the outrageous incidence of morbidity reported in our study. The perception of the women on ill health after delivery, when they were interviewed, could also be a contributory factor.

The commonest morbidities were postpartum hemorrhage (47.3%), genital injury (30.9%), genital sepsis (16.4%), mental disorder (3.6%) and puerperal pyrexia (1.9%). These morbidities though differ in terms of magnitude, are the same pattern wise to those reported in other similar studies in the different regions of Nigeria [3], [6], [7]. This is truly the picture of the common direct causes of maternal deaths in developing nations which is namely; PPH, genital sepsis, hypertensive disorders of pregnancy, obstructed labour, and unsafe abortions among others [3], [8]. It is a reflection of the low socio-economic conditions of developing nations that impact negatively on the quality of care offered to women in pregnancy, during labour, and thereafter in our part of the world; and calls for a renewed vigor in the promotion of antenatal attendance, hospital delivery, intrapartum care by skilled birth attendance and post-partum care [8]. There is a need for consistent and adequate use of uterotonics in labour, training of accoucheurs to know how to manage the delivery process in order to prevent genital injuries, adequate and appropriate use of antibiotics, and labour companionship.

The maternal morbidities were significantly related to two variables namely; less than the recommended eight (8) ANC visits ($p = 0.05$) and the use of instrumental delivery (0.002). This buttresses the need for women to attend ANC during which preventive measures are adopted to minimize the risk of morbidity and death, particularly in high risk pregnancies. Again, the use of instrumental delivery is expected to be done only amongst accouchers who are well-trained in the art. This is because in the hand of the unskillful, Obstetric instruments especially the forceps is a dangerous instrument. Women who had caesarean delivery were less likely to have morbidity ($p = 0.002$)

TABLE IV: Statistical Analysis of Maternal Morbidity and Relationship with Some Obstetric Variables

Variable		Maternal Morbidity		Total	Statistics
		Yes	No		
Parity	primipara	18	71	89	$X^2 = 0.25$
	multipara	37	124	161	$P = 0.63$
Total		**55**	**195**	**250**	
ANC	<8	47	143	190	$X^2 = 3.84$
Visits	8	7	39	46	$P = 0.05$
	>8	1	13	14	
Total		**55**	**195**	**250**	
MOD	SVD	32	83	115	$X^2 = 12.28$
	C/S	20	111	131	$P = 0.002$
	Instrumental	3	1	4	
Total		**55**	**195**	**250**	

TABLE V: Statistical Analysis of Newborn Morbidity and Relationship with Some Obstetric Variables

Variable		Newborn morbidity		Total	Statistics
		Yes	No		
Parity	**primipara**	28	61	89	$X^2 = 4.7$
	multipara	31	130	161	$P = 0.042$
Total		**59**	**191**	**250**	
ANC	<8	47	143	190	$X^2 = 0.49$
Visits	8	9	37	46	$P = 0.512$
	>8	3	11	14	
Total		**59**	**191**	**250**	
MOD	SVD	30	85	115	$X^2 = 0.77$
	C/S	28	103	131	$P = 0.680$
	Instrumental	1	3	4	
Total		**59**	**191**	**250**	

which is more likely a genital injury. The lesson here is to ensure that abdominal delivery is not withheld from women where indicated. In cultures and regions where there is the aversion to caesarean section, efforts must be made to adequately enlighten patients so that they are able to make an informed decision by consenting to this mode of delivery.

Considering newborn morbidity; neonatal asphyxia (25.4%), neonatal jaundice (25.4%), low birth weight (22.0%), neonatal sepsis (6.8%) among others were most common. Studies have reported neonatal asphyxia to be responsible for 23% of newborn deaths, and can largely be prevented by improved care during labour and delivery [9]. This condition can be alleviated by a trained birth attendant who can detect its signs and resuscitate the newborn promptly [9]. According to international estimates, 27% of neonates die due to prematurity and 15% of all newborns are born with low birth weight (defined as infants weighing less than 2,500 grams at birth). Low birth weight (LBW), which is caused by preterm birth or intrauterine growth restriction, is said to be an underlying factor in 60%–80% of neonatal deaths [9]. The majority of such cases occur in South Asia in particular, and also in sub-Saharan Africa the region with the highest rates of undernutrition among girls and women [8]–[11].

Both LBW and intra-uterine growth restriction which are associated with maternal undernutrition and ill-health among others pose a serious risk for perinatal deaths [9]. Feto-maternal experts are expected to correctly identify and promptly institute proper management, including early treatment of maternal diseases and good nutrition in order to prevent lifelong consequences and deaths of affected newborns [9]. Neonatal sepsis on the other hand is said to account for 36% of all newborn deaths [9]. Infection can occur at any point during the first month of life but is the main cause of neonatal death after the first week. Although clean delivery is part of safe motherhood, maternal infections should be identified and treated appropriately during pregnancy.

Mothers that had less than 8 ANC visits as recommended by WHO were more likely to have morbidity as showed in the study. This again brings to the fore the importance of quality ANC attendance where a comprehensive package of health and nutritional services are rendered to the expectant mother. This is a period where women are cared for by identifying factors that will militate against safe motherhood and delivery to healthy offspring. Barriers to accessing and utilizing ANC at health facilities manned by trained health workers should be addressed. These include issues such as; distance, cost, availability of drugs/medicines, long waiting time, health workers attitudes, quality of prenatal care, funding and support to the facilities, etc. [12]. Overall, integrating maternal and newborn care will improve health outcomes [13]. The study also demonstrated that 75% of women who had instrumental deliveries were more likely to suffer morbidity. This is likely to be genital injuries from poor technique

of usage of the instruments. Birth attendants are expected to be adequately trained before they can correctly use instruments for delivery to avoid genital injuries which have consequences in the short and long term.

Neonates born to primiparous women were also more likely to suffer morbidity. This could be due to several factors. Women having their first pregnancies may be inexperienced in taking care of their health during pregnancy, poor attendance at antenatal clinics, nutritional inadequacies, and less compliance with antenatal education programs and health preventive measures instituted at the antenatal clinics among other reasons.

5. Conclusion

The study showed that PPH, genital injuries, and genital sepsis were the commonest maternal morbidities, while Neonatal asphyxia, jaundice, and LBW were commonest in the newborn. Less than eight ANC visits and use of instrumental delivery contributed more to morbidities in the mothers while neonates born to primiparous women were more likely to suffer morbidity. Campaign for adequate antenatal care clinic visits should be sustained and was indicated cesarean delivery should not be denied to women. Accouchers must be trained in the usage of instrumental deliveries to reduce morbidities associated with it.

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Conflict of interest

The authors declare no conflict of interest.

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