



## Pattern of Obstetric Emergencies and Its Contribution to Adverse Pregnancy Outcome in a Tertiary Hospital North Central Nigeria: A Two Year Review

Onazi Ochima<sup>1\*</sup>, Rachael E Audu<sup>1</sup>, Ranyang Akafa<sup>2</sup>

<sup>1</sup>Department of Obstetrics and Gynaecology, Federal Medical Centre Keffi, Nasarawa State  
Nigeria

<sup>2</sup>Department of Obstetrics and Gynaecology, State Specialist Hospital, Jalingo Taraba State,  
Nigeria

\*Corresponding e-mail: [otsima179@gmail.com](mailto:otsima179@gmail.com)

### ABSTRACT

**Background:** Successful pregnancy outcome is usually a thrilling experience for the mother and her family. Though a physiological process it is often fraught with complications that can impact negatively on pregnancy outcome with resultant high maternal and fetal morbidity and mortality. **Methodology:** The study was to assess common pregnancy complications seen at our obstetric emergency unit. Electronic medical records of all the women seen and managed in the obstetric emergency unit at Federal Medical Centre Keffi between 1st January 2018 and 31st December 2019 were searched. The socio-demographic profile, booking status, type of emergency, mode of delivery, and pregnancy outcome were extracted and analyzed. **Results:** A total of 278 cases of obstetrics emergencies out of 2414 deliveries were recorded. The majority of the women were un-booked (56.3%), the age ranged from (15-44) years. The leading causes of obstetric emergencies are hypertensive disorders of pregnancy, prolonged rupture of fetal membrane, intrauterine fetal deaths, Ante-partum hemorrhage, and two or more previous cesarean section in labor. Obstetric emergencies accounted for 66.7% of maternal mortality with hypertensive disorders of pregnancy, obstructed labor, and obstetric hemorrhage as the leading causes. The perinatal mortality was 30 per 1000 live births. It is significantly higher among women without antenatal care services. **Conclusion:** Obstetric emergencies continue to pose a significant challenge to safe motherhood in our environment partly due to poor utilization of antenatal care services as many of the causes of maternal mortality are preventable requiring no high-tech equipment or training.

**Keywords:** Federal Medical Centre Keffi, Fetal outcome, Maternal outcome, Obstetric emergencies

### INTRODUCTION

Obstetric emergencies are usually unexpected life-threatening conditions affecting the mother and/or the fetus that can potentially lead to adverse pregnancy outcomes if not timely and appropriately addressed [1]. It usually gives no warning and is not limited to any particular time of the day. Obstetric emergencies are the major contributors to maternal and perinatal morbidity and mortality worldwide [2]. Over the years there have been tremendous advances and improvements in the field of medicine including diagnosis and management of pregnancy and its complications leading to a significant decline in maternal morbidity and mortality worldwide. This gain however has been disproportionate in favor of developed countries as maternal morbidity and mortality remain a public health concern in developing countries [3]. Some of the reasons may be due to widespread poverty, lack of access to quality and affordable obstetric care services especially in times of emergencies [4,5]. The concept of birth preparedness and complication readiness is alien to most couples in developing countries as some of the pregnancies are unplanned and maybe unwanted [6]. This is compounded by poor transportation facilities, non-functional primary and secondary level of health care services, and inadequate or lack of skilled birth attendants [7]. Data on the pattern of obstetric emergencies and its contributions to maternal and perinatal mortality in Nigeria especially in north-central Nigeria is sparse thus its impact on the poor/dismal health indices not fully appreciated especially at the backdrop of cultural and religious belief of the people

fuelled by ignorance and illiteracy [8]. Study of this kind is thus imperative to facilitate planning, mobilization, and sensitization of relevant stakeholders for preventions, early detection, and effective case management aimed at making pregnancies safer and fulfilling for our women.

### MATERIAL AND METHODS

This is a two-year retrospective study of all pregnant women seen and managed at the obstetric emergency ward at Federal Medical Centre Keffi between 1<sup>st</sup> January 2018 and 31<sup>st</sup> December 2019. Relevant data including patient socio-demographic profile, booking status, gestational age at presentation, diagnosis, the maternal and perinatal outcome was extracted from the electronic medical records of patients that presented with obstetric emergencies. Data analysis was done using SPSS software version 20 and results presented in percentages, tables, and figures.

### RESULTS

There were 2414 deliveries with complete medical records with 278 cases of obstetric emergencies out of a total of 2443 patients seen within the study period. Maternal age ranged from (15-44) years with a mean of  $28.9 \pm 5.39$ . Only 21.6% had no formal education, their parity ranged from 0-9 with a mean of  $1.7 \pm 1.8$ . The majority of the women are un-booked (56.5%) Table 1.

**Table 1 Socio-demographic characteristics, N=278**

Variables	Frequency	Percentage
<b>Age (years)</b>		
<20 yrs	6	2.2
20-24 yrs	51	18.3
25-29	97	34.9
30-34	78	28.1
35 yrs and above	46	16.5
<b>Mean <math>\pm</math> SD; min; max</b>	$28.92 \pm 5.39$ ; 15; 44	
<b>Educational Level</b>		
No formal education	60	21.6
Primary	49	17.6
Secondary	104	37.4
Tertiary	65	23.4
<b>Occupation</b>		
Trading	55	19.8
Housewife	157	56.5
Farming	2	0.7
Artisan	12	4.3
Civil Servant	35	12.6
Student	17	6.1
<b>Parity</b>		
0	97	34.9
1-2	109	39.2
3-4	45	16.2
5 and above	27	9.7
<b>Mean <math>\pm</math> SD; min; max</b>	$1.71 \pm 1.84$ ; 0; 9	
<b>Booking status</b>		
Booked	126	45.3
Unbooked	152	54.7

The leading causes of obstetric emergencies include hypertensive disorders of pregnancy, Prolong Rupture of Fetal Membrane (PROM), two or more previous cesarean section in labor, Intra Uterine Fetal Death (IUFD), and antepartum hemorrhage. Other important causes are uterine rupture, prolonged pregnancy, fetal distress, and obstructed labor (Table 2).

Table 2 Obstetrics emergencies

Variables	Frequency	Percentage
Cord Prolapse	3	1.1
Road traffic accident	1	0.4
Domestic accident	1	0.4
Pre-eclampsia	53	19.1
Eclampsia	3	1.1
Obstructed labour	10	3.6
Compound presentation	1	0.4
Polyhydramnios	2	0.7
Abruptio placentae	17	6.1
Placenta praevia	14	5
PROM	30	11.8
Oligohydramnios	3	1.1
Malaria in pregnancy	11	4
UTI in pregnancy	6	2.2
Sickle cell crisis	8	2.9
Gastroenteritis	2	0.7
Bacteria vaginosis	2	0.7
Prolonged pregnancy	23	8.3
Post-partum hemorrhage	11	4
Uterine rupture	11	4
Retained second twins	2	0.7
Two or more previous CS/		
Myomectomy in labor	27	9.7
IUFD	15	5.4
Footling breech in labor	7	2.5
Transverse lie in labor	3	1.1
Fetal distress	12	4.3

Only 8.6% of the cases were treated as out-patient (Table 3), while 55.5% required surgical interventions (Table 4). There were 9 cases of maternal mortality during the study period of which obstetric emergencies accounted for 6 or 66.7% (Table 5). All the maternal deaths were among the un-booked patients (Table 6). The causes of maternal deaths are hypertensive disorders of pregnancy, obstructed labor, and post-partum hemorrhage (Table 7 and Figure 1).

Table 3 Type of treatment given

Variables	Frequency	Percentage
<b>Treatment</b>		
In patient	254	91.4
Outpatient	24	8.6

Table 4 Mode of delivery, N=254

Variables	Frequency	Percentage
<b>Mode of delivery</b>		
SVD (Hospital)	101	39.8
SVD (Home delivery)	12	4.7
CS	130	51.2
Laparotomy	11	4.3

Table 5 Maternal outcome, N= 278

Variables	Frequency	Percentage
<b>Outcome</b>		
Dead	6	2.2
Alive	272	97.8

Table 6 Relationship between Maternal Mortality and booking status, significant when p&lt;0.05

Variables	Alive (272)	Dead (6)	Total (278)	$\chi^2$	p-value
	n (%)	n (%)	N (%)		
<b>Booking status</b>					
Booked	126 (100)	0 (0)	126	5.083	0.024
Un-booked	146 (96.1)	6(3.9)	152		
Total	272 (97.8)	6 (2.2)	278 (100)		

Table 7 Relationship between maternal mortality and obstetric emergency

Variables	Dead	Alive	Total
	n (%)	n (%)	N (%)
<b>Emergencies</b>			
Cord prolapse	0 (0.0)	3 (100.0)	3
RTA	0 (0.0)	1 (100.0)	1
Domestic accident	0 (0.0)	1 (100.0)	1
Pre-Eclampsia	3 (5.7)	50 (94.3)	53
Eclampsia	0 (0.0)	3 (0.0)	3
Obstructed labour	1 (10.0)	9 (90.0)	10
Compound presentation	0 (0.0)	1 (100.0)	1
Polyhydramios	0 (0.0)	2 (100.0)	2
Abruptio placentae	0 (0.0)	17 (100.0)	17
Placenta praevia	0 (0.0)	14 (100.0)	14
PROM	0 (0.0)	30 (100.0)	30
Oligohydramnios	0 (0.0)	3 (100.0)	3
Malaria in pregnancy	0 (0.0)	11 (100.0)	11
UTI in pregnancy	0 (0.0)	6 (100.0)	6
Sickle cell crisis	0 (0.0)	8 (100.0)	8
Gastroenteritis	0 (0.0)	2 (100.0)	2
Bacteria vaginosis	0 (0.0)	2 (100.0)	2
Prolonged pregnancy	0 (0.0)	23 (100.0)	23
PPH	1 (9.1)	10 (90.9)	11
Uterine rupture	1 (9.1)	10 (90.9)	11
Retained second twins	0 (0.0)	2 (100.0)	2
More than two previous CS/	0 (0.0)	27 (100.0)	27
<b>Myomectomy</b>			

Footling breech	0 (0.0)	7 (100.0)	7
Transverse lie	0 (0.0)	3 (100.0)	3
IUFD	15 (100.0)	0 (0.0)	15
Fetal distress	0 (0.0)	12 (100)	12

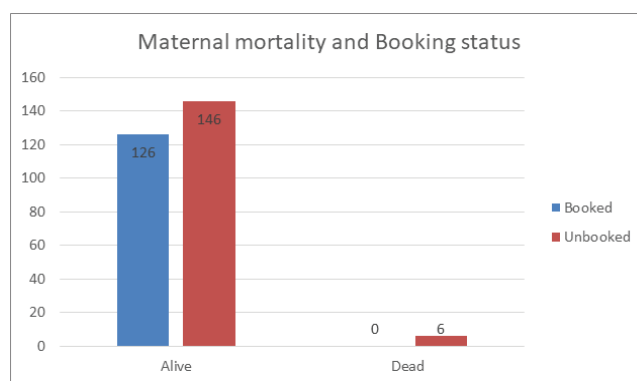


Figure 1 Maternal mortality and booking status

There was 70 perinatal mortality as shown in Table 8 (38 were macerated stillbirths and 32 fresh stillbirths), the perinatal mortality rate was 30 per 1000 live birth, the deaths are significantly higher among women that are un-booked (Table 9 and Figure 2). 46.6% of the babies were admitted into SCBU, 36% had an Apgar score of less than 7 at 1<sup>st</sup> minute, and 15.3% after 5 minutes. 31.3% had low birth weight (<2.5 kg) Table 8.

The leading causes of perinatal deaths include severe pre-eclampsia, severe abruptio placentae, PROM, rupture uterus, prolonged pregnancy, and obstructed labor (Table 10).

Table 8 Fetal outcome, N=259

Variables	Frequency	Percentage
Dead (FSB)	38	14.7
Dead (MSB)	32	12.4
Alive	189	72.9
<b>SCBU admission</b>		
Yes	88	46.6
No	101	53.4
<b>Apgar score 1<sup>st</sup> minute</b>		
<7	68	36
7+	121	64
<b>Mean ± SD</b>	6.47 ± 1.89	
<b>Apgar score 5<sup>th</sup> minute</b>		
<7	29	15.3
7+	160	84.7
<b>Mean ± SD; min; max</b>	7.82 ± 2.01	
<b>Birth weight (grams)</b>		
Low (<2500 g)	81	31.3
Normal (2500-3900 g)	170	65.6
Macrosomic (4000 g+)	8	3.1
<b>Mean ± SD; min; max</b>	2683.10 ± 826.15; 800; 4200	

Table 9 Relationship between perinatal mortality and booking status, significant when p&lt;0.05

Variables	Dead	Alive	$\chi^2$	p-value
	n (%)	n (%)		
<b>Booking status</b>				
Booked	10 (18.7)	107 (56.6)	37.43	<0.001
Un-booked	60 (81.3)	82 (43.4)		

Table 10 Relationship between fetal/perinatal mortality and obstetric emergency

Variables	Dead	Alive
	n (%)	n (%)
<b>Emergencies</b>		
Cord prolapse	0 (0.0)	3 (100.0)
RTA	0 (0.0)	1 (100.0)
Domestic accident	0 (0.0)	1 (100.0)
Pre-eclampsia	12 (22.6)	41 (77.4)
Eclampsia	2 (66.7)	1 (33.3)
Obstructed labour	5 (50.0)	5 (50.0)
Compound presentation	0 (0.0)	1 (100.0)
Polyhydramios	0 (0.0)	2 (100.0)
Abruptio placentae	14 (82.4)	3 (17.6)
Placenta praevia	0 (0.0)	14 (100.0)
PROM	1 (3.3)	29 (96.7)
Oligohydramnios	0 (0.0)	3 (100.0)
Malaria in pregnancy	2 (18.1)	9 (81.9)
UTI in pregnancy	0 (0.0)	6 (100.0)
Sickle cell crisis	4 (50.0)	4 (50.0)
Gastroenteritis	0 (0.0)	2 (100.0)
Bacteria vaginosis	0 (0.0)	2 (100.0)
Prolonged pregnancy	1 (4.3)	22 (95.7)
PPH	6 (0.0)	5 (45.5)
Uterine rupture	9 (81.8s)	2 (18.2)
Retained second twins	0 (0.0)	2 (100.0)
More than two previous CS/	0 (0.0)	27 (100)
<b>Myomectomy</b>		
Footling breech	0	7 (100)
Transverse lie	0 (0.0)	3 (100.0)
Foetal distress	4 (33.3)	8 (66.7)
IUFD	10(100)	0 (0)

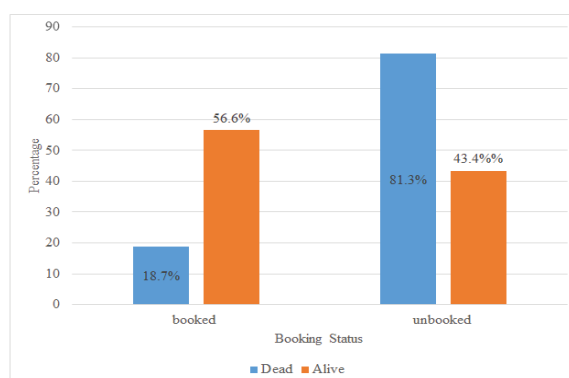


Figure 2 Fetal/perinatal outcome and booking status

## DISCUSSION

Obstetric emergencies remain relatively common and continue to pose a significant challenge to clinicians and maternal safety and positive pregnancy outcome. It cut across all parties. Un-booked patients continue to bear the greater burden as they have had no form of ante-natal interventions such as screening for high-risk pregnancies, administration of Intermittent Preventive Treatment in pregnancy (IPTp) for malaria prophylaxis, Tetanus toxoid, nutritional and health advice. Most are unaware of the concept of birth preparedness and complication readiness. Obstetric emergencies accounted for most of the maternal mortality at the study center with all the recorded maternal deaths being among the women without antenatal care services similarly, perinatal mortality in this study was significantly higher in the un-booked group (Tables 6 and 9 respectively). The combination of prematurity and low birth weight impact negatively on perinatal morbidity and mortality as 31% have low birth weight and nearly half (46.6%) of the babies were admitted into SCBU adding to the cost of care and hospital stay. This pattern is similar to most centers in the country and other low resource countries [9-12]. The importance of antenatal care supervision and skilled birth attendance in reducing maternal and perinatal mortality cannot be overemphasized. The number of ANC services received correlate positively with having skilled birth attendance at delivery [13]. Skilled birth attendance was one of the indicators adopted to measure the achievement goal of the international community to reduce maternal mortality by  $\frac{3}{4}$  by 2015 (MDG5). The target was to achieve 80% coverage by 2005, 85% by 2010, and 90% by 2015. Five years after the target year, of the 70% of women with any antenatal care services, only 49% had skilled birth attendance in their last pregnancy experience [13].

The leading causes of maternal mortality in the study are severe pre-eclampsia, obstructed labor, and obstetric hemorrhage. Interestingly the trio alongside puerperal sepsis, unsafe abortion, and its sequale are among the leading causes of maternal mortality in the country [10,14]. Similar findings were reported by Lamina Mustafa in southwest Nigeria and Nwobodo in North West [15,16]. Most of the causes are preventable requiring no high-tech equipment or training, only political will, and steps to improve women's access to timely and quality maternal and child health care services. Over 90% were managed as an in-patient and 55.5% had surgical intervention/ operative deliveries further increasing cost of care, maternal and perinatal morbidity, and mortality. About 53.2% were aged between (20-29) years with only 21.6% without formal education. This is similar to other studies [8].

## CONCLUSION

Obstetric emergencies continue to pose a significant challenge to safe motherhood in our environment partly due to poor utilization of antenatal care services as many of the causes of maternal mortality are preventable requiring no high-tech equipment or training. One of the proven strategies is improving women's access to quality antenatal care services and skilled birth attendance at delivery.

## DECLARATIONS

### Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Acknowledgment

I want to specially acknowledge Dr Tivkaa David for his role in retrieving the medical records of some of the patients, similarly Mr Odekunle Jelil for helping in data analysis.

### Source of Support

None

### Ethical Approval

Obtained from the hospital ethical committee.

## REFERENCES

- [1] Campbell, Stuart, and Christoph Lees, eds. "Obstetrics by ten teachers." *Arnold*, 2000.
- [2] Legesse, Tegene, Misra Abdulahi, and Anteneh Dirar. "Trends and causes of maternal mortality in Jimma

- University specialized hospital, Southwest Ethiopia: a matched case-control study.” *International Journal of Women’s Health*, Vol. 9, 2017, pp. 307-13.
- [3] World Health Organization. “Trends in maternal mortality: 1990 to 2013: estimates by WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division: executive summary.” No. WHO/RHR/14.13. *World Health Organization*, 2014.
- [4] Berhe, Abadi Kidanemariam, et al. “Birth preparedness and complication readiness among pregnant women in Ethiopia: a systematic review and meta-analysis.” *Reproductive Health*, Vol. 15, No. 1, 2018, pp. 182.
- [5] Kampikaho, A., and L. M. Irwig. “Incidence and causes of maternal mortality in five Kampala hospitals, 1980-1986.” *East African Medical Journal*, Vol. 68, No. 8, 1991, pp. 624-31.
- [6] Omo-Aghoja, L. O., et al. “Maternal mortality and emergency obstetric care in Benin City, South-south Nigeria.” *Journal of Clinical Medicine and Research*, Vol. 2, No. 4, 2010, pp. 55-60.
- [7] Thaddeus, Sreen, and Deborah Maine. “Too far to walk: maternal mortality in context.” *Social Science and Medicine*, Vol. 38, No. 8, 1994, pp. 1091-110.
- [8] Najam, Rehana, Sarika Gupta, and Hasnahana Chowdhury. “Pattern of obstetrical emergencies and fetal outcomes in a tertiary care center.” *Acta Medica International*, Vol. 2, No. 1, 2015, pp. 105-10.
- [9] Okogbenin, S. A., et al. “The demographic characteristics and health seeking behaviour of unbooked patients in Irrua specialist teaching hospital.” *Nigerian Journal of Medicine*, Vol. 16, No. 1, 2007, pp. 65-70.
- [10] Adetoro, O. O. “Maternal mortality-a twelve-year survey at the University of Ilorin Teaching Hospital (UITH) Ilorin, Nigeria.” *International Journal of Gynecology and Obstetrics*, Vol. 25, No. 2, 1987, pp. 93-8.
- [11] Pokharel, H. P., et al. “Maternal and perinatal outcome among the booked and unbooked pregnancies from catchments area of BP Koirala Institute of Health Sciences, Nepal.” *Kathmandu University Medical Journal (KUMJ)*, Vol. 5, No. 2, 2007, pp. 173-6.
- [12] Briggs, Nimi D. “Maternal death in the booked and unbooked patients: University of Port Harcourt Teaching Hospital experience.” *Tropical Journal of Obstetrics and Gynaecology*, Vol. 1, No. 1, 1988, pp. 26-9.
- [13] Graham, Wendy J., Jacqueline S. Bell, and Colin HW Bullough. “Can skilled attendance at delivery reduce maternal mortality in developing countries?.” *Safe Motherhood Strategies: A Review of the Evidence*, Vol. 17, 2001, pp. 97-129.
- [14] Akingele F, Roberts OA. “Maternal mortality at the university college, Ibadan: a ten year review.” *In proceedings of the 5th international congress, society of obstetrics and Gynaecology of Nigeria (SOGON)*, Vol. 29, Benin, Nigeria, 1998.
- [15] Mustafa Adelaja, Lamina, and Oladapo Olufemi Taiwo. “Maternal and fetal outcome of obstetric emergencies in a tertiary health institution in South-Western Nigeria.” *International Scholarly Research Notices*, Vol. 2011, 2011.
- [16] Nwobodo, E. I. “Obstetric emergencies as seen in a tertiary health institution in North-Western Nigeria: maternal and fetal outcome.” *Nigerian Medical Practitioner*, Vol. 49, No. 3, 2006, pp. 54-5.