Prevalence, Causes and Management Outcomes of Antepartum Haemorrhage at UNIMEDTH, Akure over a Period of 5 years

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Abstract

Preamble: Concerns over maternal mortality have been raised not only by the United Nations and other international organizations, but also by national governments in developing nations like Nigeria. This major public health problem is being faced by many nations over time. About 94% of maternal deaths occur in resource poor settings with South Asia and Sub-Saharan Africa having almost 86% of maternal deaths worldwide (WHO). Maternal mortality in Nigeria remains at an unacceptable level.

Methodology: A descriptive retrospective hospital-based design was employed for the study. The population for the study was all patients managed for antepartum haemorrhage over a period of 5 years from 2018-2022. Two hundred and seven patients out of 9,890 deliveries had Antepartum haemorrhage at the University of Medical Sciences Teaching Hospital, Akure Complex for the period under review. The researcher extracted the required information/data from the hospital records, case notes and theatre registers of the hospital kept from 2018-2022. Data were analyzed using descriptive and inferential statistics by chi square at 0.05 level of significance.

Results: The study found among others, prevalence of antepartum hemorrhage among pregnant women in the specific location to be 2.1%. Placenta previa was the most common cause, and effective management strategies were employed, including blood transfusions and electronic fetal monitoring. The majority of patients, 95.2% did not have a premature delivery; over seventy percent (71.5%) did not require a cesarean operation. Ninety five percent (95.2%) did not require a blood transfusion, all the patients managed (100%) did not experience collapse during pregnancy, and 4.8% mothers were temporarily admitted to the intensive care unit (HDU) while 6.8% babies were admitted to neonatal care unit and 4.3% of babies did not survive.

Conclusion: The prevalence of antepartum hemorrhage among pregnant women in the study location to be 2.1% which is relatively low. Placenta previa was the most common cause, and effective management strategies were employed, including blood transfusions and electronic fetal monitoring. Public health strategies geared towards reducing rate of caesarean section will go a long way in reducing incidences of tendency for placenta previa and indirectly, antepartum haemorrhage.

Keywords: Antepartum Haemorrhage; Obstetric Emergency; Pregnancy Complication; Placenta Previa; Abruption Placenta; Fetomaternal Outcomes

Abbreviations

ICU: Intensive Care Unit; APH: Antepartum Hemorrhage.

Introduction

Concerns over maternal mortality have been raised not only by the United Nations and other international organizations, but also by national governments in developing nations like Nigeria [1]. This major public health problem is being faced by many nations over time. About 94% of maternal deaths occur in resource poor settings with south Asia and sub-Saharan Africa having almost 86% of maternal deaths worldwide (WHO). There are at least 150,000 maternal deaths in Africa annually, and this number is steadily rising in several African nations [2]. Maternal mortality in Nigeria remains at an unacceptable level. According to Olamijulo JA, et al. [3] the maternal death rate in Nigeria is 1,500 per 100,000 births. With this number, Nigeria is responsible for 10% of all maternal deaths worldwide. In 2019, record showed that 314 women died from childbearing-related issues in Ondo State. Ondo State had about 22,364 total live births. When this is calculated by using 314 (number of maternal deaths) to divide the figure of 22,364 women (that had safe delivery) per 100,000, it gives the maternal mortality ratio of 1,404.04.

Direct obstetric deaths are deaths that come from obstetric difficulties that occur during pregnancy, labour, or during puerperium; deaths that result from interventions, omissions, or wrong treatments; or deaths that result from a sequence of events that result from direct causes like eclampsia, postpartum hemorrhage, abortion, obstructed labour or sepsis [4]. Indirect obstetric deaths occur when a woman passes away as a result of a preexisting condition or a condition that manifested itself during her pregnancy. Conditions like anemia, HIV/AIDS, malaria, and cardiovascular disease are examples of causes of indirect maternal deaths. Among the leading causes of maternal death, hemorrhage has been singled out by the Federal Ministry of Health [5], in addition to lack of availability and utilization of reproductive health care [6], also cited hemorrhage as a leading cause of maternal mortality in Nigeria.

Bleeding from or into the genital tract after 24 weeks of pregnancy (or after fetal viability) but before birth is considered an antepartum hemorrhage [7]. Placenta previa and placenta abruption are the leading causes of antepartum hemorrhage. In this context, "antepartum haemorrhage" means bleeding from or into the vaginal tract that occurs after age of viability (28 weeks of pregnancy) but before birth [8]. This is because our neonatal units do not have adequate resources to ensure the survival of infants born before 28 weeks. Placental abruption has been linked to smoking during pregnancy [9], multiple births (Rahman, 2018), pre-eclampsia, and multiparity in the mother [10], (Sanchez, et al. 2022; Rahman, 2018). However, some studies have shown a slight link between maternal smoking and placenta previa, and others have shown the opposite [9]. Therefore, the purpose of this study was to evaluate the prevalence of antepartum hemorrhage (APH), along with its related risk factors and categorized therapy, which is still an area of inquiry that has not been thoroughly examined, also to evaluate the outcomes of management. The study focused on pregnant women with antepartum haemorrhage managed at the University of Medical Sciences Teaching Hospital, Akure Ondo State from 2018 to 2023.

Aim of the Study

The study assessed the prevalence of antepartum haemorrhage, the predominant causes amongst those that presented with antepartum haemorrhage and the outcomes of management in terms of baby's APGA score and rate of admission to neonatal care unit.

Objectives of the Study

General Objective: To find out how common antepartum haemorrhage was amongst those that delivered in the center over the period of 5 years, the predominant causes of antepartum haemorrhage and the outcomes of their management

Specific Objectives
- The study tried to find out the number of patients that presented with antepartum haemorrhage amongst all patients that delivered in UNIMEDTH over a period of 5 years.
- The study evaluated the predominant causes of antepartum haemorrhage amongst those that presented with the condition over the study period.
- The study assessed the outcomes of management of antepartum haemorrhage in terms of neonatal APGAR score and admission to neonatal care unit.

Methodology

Site

The study was carried out at the obstetrics and Gynaecology department of University of Medical Sciences Teaching Hospital, Akure.

Design

The study is a descriptive cross sectional study.

Study Population

The study was conducted on all patients that had antepaertum haemorrhage and were managed in the Obstetrics and Gynaecology department of the UNIMEDTH, Akure.

Inclusion Criteria

All patients that had bleeding in pregnancy after 28 weeks of pregnancy and were managed and delivered at the Obstetrics and Gynaecology department of the UNIMEDTH, Akure.

Ethical Considerations

Ethical clearance was obtained from the Research and Ethics committee to carry out the descriptive retrospective study which was granted.

Declaration of Interest: No any conflict of interest on the part of the researchers.

Data Collection Instrument

A simple structured proforma was used to get the required information for the study. This was used to extract information about the patients that presented with antepartum haemorrhage and as documented in their antenatal records, labour ward register, theatre register and the neonatal documentation.

Data Collection Procedure

The study was based on information derivable from the case folders of the patients, their Labour ward records and antenatal ward records. with the aid of a trained research assistant and the collaboration of the ward nurses, labour ward nurses, theatre perioperative nurses and the health information management unit officers, the researcher went through and review the hospital files, antenatal records, Labour ward registers and neonatal documentations of all patients managed for antepartum haemorrhage in the hospital over a period of 5 years.

Their social and obstetrics bio-data, mode of presentation, diagnosis and management outcomes was extracted from the records. The study proforma was used as a template for extracting the required information from the records.

Method of Data Analysis

The study proforma was carefully sorted for appropriate filling and completeness. The data was entered, cleaned and analyzed using the Statistical Package for the Social Sciences (SPSS) version 29. Frequency tables was drawn and Chi square analysis was used for categorical variables and p-value of <0.05 considered significant.

Results

Socio-Demographic Characteristics

Variables		Frequency	Percentage
Age (Mean Age=33±7 years)	<26years	23	11.10%
	26- 40yrs	106	51,2%
	41- 59yrs	78	37.7%%
Religion	Protestant	50	24.20%
	Catholic	100	48.30%
	Muslim	50	24.20%
	Traditional	7	3.30%
	Others(Specify)	0	0
Occupation	Full House wife	10	4.80%
	Sedentary/professional	188	90.80%
	Police/army/manual.	9	4.30%

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Weeks / months of Pregnancy at delivery (Mean Gestatuional Age 36 ± 2weeks)	28-32wks	15	7.50%
	32-34wks	30	14.50%
	34-37wks	66	31.90%
	> 37wks	96	46.40%
Parity	Two	110	53.10%
	More than Two Children	97	46.90%
Mode of Delivery	Cesarean operation	163	78.70%
	Vaginal Delivery	44	21.30%
Education	Primary	10	4.80%
	Secondary	41	19.80%
	Post-Secondary	99	47.80%
	Graduate	57	27.50%

Table 1: Socio-demographic characteristics of the patients.

(Table 1) above shows the socio-demographc characteristics of the patients. Majority of the patients managed, 106(51.2%) are between 41- 59yrs, majority 100(48.3%) are Catholics. On the occupation of patients, majority 188(90.8%) are in the Sedentary/professional categories, majority 96(46.9%) were above 37weeks pregnant, One hundred and ten, 110(53.1%) of the patients had more than two children. Finally majority of the patients 163(78.7%) had caesarean section as mode of management of their antepartum haemorrhage. Based on the above, it is therefore imperative that the respondents were eminently qualified to provide necessary information on the subject of investigation as documented in their hospital records.

Results on Prevalence of Antepartum Haemorrhage among Pregnant Women in University of Medical Sciences Teaching Hospital, Akure Complex

Number of patients that had antepartum haemorrhage was 207 out of 9890 deliveries. All of them were managed in the centre and antepartum haemorrhage management protocol was used for all of them. All the 207 patients that had antepartum haemorrhage delivered in the centre (Table 2).

Average number of deliveries per year	Total number of deliveries over period of study (5 years)	Number of antepartum haemorrhage cases over 5 years	Calculation of Prevalence of antepartum haemorrhage	Prevalence of antepartum haemorrhage
Approx. 1500	9870	207	9890/207 1 case of antepartum haemorrhage in every 38 deliveries	$9890 \equiv 207$ $100 \equiv x$ $= \dfrac{100 \times 207}{9890}$ $= 2.1\%$
			2.1 Antepartum haemorrhage in every 100 deliveries	

Table 2: Descriptive Analysis of Prevalence of Ante-partum Hemorrhage among Pregnant Women in UNIMEDTH, Akure, Ondo State over the Period of the Study.

There were 9890 deliveries in UNIMEDTH over the period of five years from 2018 to 2022 with an approximate average of about 1900 per year. A total of 207 antepartum haemorrhage patients were seen over the period giving a prevalence of 2.1% (Table 3).

Variables	Options	Frequency	Percentage	Remarks
Did the patient have bleeding during previous pregnancies?	Yes	55	26.6%	Majority did not experience bleeding in pregnancy previously. (73.4%)
	No	152	73.4%	
Which Pregnancy was associated with vaginal bleeding?	First pregnancy	12	5.8%	Majority experienced vaginal bleeding during second pregnancy (53.1%)
	Second pregnancy	110	53.1%	
	Third pregnancy	65	31.4%	
	Fourth pregnancy	10	4.8%	
	Fifth pregnancy	10	4.8%	
At what gestational age did the bleeding in pregnancy occur	28-34wks	130	62.8%	Majority had vaginal bleeding at 28-34wks of pregnancy (62.8%)
	34-37wks	57	27.5%	
	>37wks	20	9.7%	
Was patient ever admitted to antenatal unit (conservative) before in the pregnancy complicated by APH?	Yes	59	28.5%	Majority were not admitted (71.5%)
	No	148	71.5%	
Duration of Stay on admission	One week	187	90.3%	Majority who got admitted spent only one week in hospital (90.3%)
	More than One week	20	9.7%	
At what stage of pregnancy was vaginal bleeding experienced	28-34wks	130	62.9%	Majority experienced it at 28-34wks of pregnancy.
	34-37wks	57	27.8%	
	After 37weeks	20	7.8%	
Type of Maternal complications found	Placenta Previa	145	70%	Majority had Placenta Previa (70%)
	Haevy Show	21	10.2%	
	Abruptio Placenta	26	12.6%	
	Vasa praevia	3	1.4%	
	Others	12	5.8%	
Any history of vaginal bleeding in the past	Yes	49	23.7%	Majority did not have history of vaginal bleeding (76.3%)
	No	158	76.3%	

Table 3: Table Showing Descriptive Analysis of Causes of Antepartum Haemorrhage among Pregnant Women in UNIMEDTH, Akure.

Majority did not experience antepartum hemorrhage. in their previous delivery (73.4%), Majority experienced their vaginal bleeding in their second pregnancy (53.1%), majority of the patients were not admitted for conservative management (71.5%), most of those who got who got admitted spent only one week in hospital (90.3%), majority of the patients had vaginal bleeding at 28-34wks of pregnancy (72.9%) and Placenta Previa was found to be responsible in 70% of them, and those who did not have history of vaginal bleeding in the past were 76.3%. Based on the above it can be inferred that the majority of cases of antepartum haemorrhage were caused by placenta previa while other significant causes were abruption placenta (12.6%), vasa previa and other causes like heavy show, genital laceration and cervicitis constitute 5.8% of the causes.

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Maternal and Perinatal Outcomes of Antepartum Haemorrhage Management Among Pregnant Women in UNIMEDTH, Akure Complex

Variables	Options	Frequency	Percentage	Remarks
Had premature delivery	Yes	10	4.8%	Majority did not have premature delivery. (95.2%)
	No	197	95.2%	
Had caesarean at delivery	Yes	199	96.1%	Majority did have caesarean operation {emergency/elective) (96.1%)
	No	8	3.9%	
Had blood transfusion during delivery	Yes	10	4.8%	Majority did not have blood transfusion during delivery. (95.2%)
	No	197	95.2%	
Collapsed during pregnancy	Yes	-		None collapsed during pregnancy(100%)
	No	207	100%	
Was admitted in High Dependence Unit (HDU)	Yes	10	4.8%	Majority were not admitted to HDU. (95.2%)
	No	197	95.2%	
Baby APGA at delivery	Good	134	64%	Majority (64%) of the babies had good health conditions at birth
	Mild-Moderate asphyxia	50	24.2%	
	Severe asphyxia needing admission to NICU	14	6.8%	
	Dead fetuses	9	4.3%	

Table 4: Table showing Maternal and Perinatal Outcomes of Antepartum Haemorrhage Management among Pregnant Women in UNIMEDTH, Akure, Ondo State.

(Table 4) provides information on the maternal and perinatal outcomes of antepartum hemorrhage among pregnant women. The majority of patients, 95.2% did not have a premature delivery; over seventy percent (71.5%) did not require a cesarean operation. Ninety five percent (95.2%) did not require a blood transfusion, all the patients managed (100%) did not experience collapse during pregnancy, and 4.8% were temporarily admitted to the intensive care unit (ICU). These findings indicate that the majority of pregnant women in the study did not encounter these obvious consequences typically associated with antepartum hemorrhage. The occurrence of these consequences was relatively low, meaning that only a minority of patients experienced them. These results align with the earlier finding that the prevalence rate of antepartum hemorrhage among pregnant mothers in the study location is low. It can be inferred from the data that the consequences of antepartum hemorrhage include premature delivery, the need for a cesarean operation, blood transfusion, and potential admission to the ICU and poor neonatal outcome. However, it is reassuring that the majority of participants did not face these complications. Overall, these findings highlight that while antepartum hemorrhage can lead to significant consequences, the majority of pregnant women in the study did not experience these specific outcomes.

Discussion

Socio-Demographic Data of Patients

The socio-demographic characteristics of the patients Majority of the patients managed, 106(51.2%) are between 26- 40yrs, the mean age of the patients was 33±7years. This finding is similar to the findings of Takai IU, et al. [11] which found that the mean age of antepartum haemorrhage patients was 32.8±5.5years. Majority 100(48.3%) are Christians and of Catholic denomination this is because the inhabitants of the study area are predominantly Christians. On the occupation of patients, majority 188(90.8%) are in the Sedentary/professional categories, majority 96(46.9%) were above 37weeks pregnant. The mean gestational age at occurrence of antepartum haemorrhage was 36weeks similar to the findings by Takai IU, et al. [11] which reported 35.3±2 weeks as the mean gestational age of occurrence of antepartum haemorrhage.

One hundred and ten, 110(53.1%) of the patients had more than two children. An earlier study by Takai IU, et al. [11] had also revealed that antepartum haemorrhage was commoner among multipara. A meta-analysis by Fan D, et al. [12] also found positive correlation between prevalence of antepartum haemorrhage and percentage of multiparous (r=0.534, p=0.027). Finally majority of the patients 163(78.7%) had caesarean section as mode of management of their antepartum haemorrhage. This assertion is similar to what Giordano et al. [13] found in their study where it was found that caesarean section was the most adopted mode of delivery in Antepartum haemorrhage from placenta previa. Based on the above, it is therefore imperative that the respondents were eminently qualified to provide necessary information on the subject of investigation as documented in their hospital records.

Prevalence of Antepartum Haemorrhage among Pregnant Women in UNIMEDTH, Akure Complex

The management protocol of antepartum hemorrhage (APH) is an important aspect of prenatal care, as it involves the timely assessment and treatment of pregnant women with vaginal bleeding. As indicated above, this study found evidence of the prevalence of APH among pregnant women in the study location for the study period to be 2.1%. This is not too different from the findings of a study carried out in the South-South region of Nigeria by Wekere FCC, et al. [14] which reported the prevalence of antepartum haemorrhage to be 2.2%. However, another study in Lagos by Adegbola O, et al. [15] had found prevalence of APH to be 3.5%. All these still point to low prevalence of antepartum haemorrhage in the region. Therefore, these findings highlight the need for further research on the prevalence of APH among pregnant women, especially in different geographical locations. It also emphasizes the importance of implementing effective management protocols to improve the outcomes for pregnant women with APH. Furthermore, an 8-year clinical review of antepartum haemorrhage at University of Maiduguri Teaching Hospital in Maiduguri Nigeria by Bako B, et al. [16] had revealed a prevalence of 1.6% which is slightly lower than the prevalence reported by the previous studies. Further studies with larger sample sizes and statistical assessments would provide more accurate insights into the prevalence and management of APH. The prevalence of antepartum haemorrhage in the study by Takai IU, et al. [11] was 1.2% far lower than the incidence found in this study.

Causes of Antepartum Haemorrhage and Management Strategies for Antepartum Haemorrhage im UNIMEDTH, Akure Complex

Furthermore, the study yielded important findings regarding the causes, management strategies, and resources available for this condition. Specifically, the study found that the most common cause of antepartum hemorrhage among the managed patients was placenta previa. This finding aligns with previous research that has identified placenta previa as a significant cause for antepartum hemorrhage [10]. Placenta previa occurs when the placenta partially or completely covers the cervix, leading to bleeding during pregnancy. Other very important cause of antepartum haemorrhage include abruption placenta, vasa previa and genital trauma in pregnancy.

At the time of presentation, a substantial number of patients in the study had experienced some blood loss but did not require immediate blood transfusions. However, the majority of individuals transfused did not need additional blood products beyond the initial transfusion. This suggests that the management strategies employed at UNIMEDTH were effective in stabilizing the patients and preventing further blood loss. The availability of resources for managing antepartum hemorrhage, such as packed red blood cells and fluid resuscitation, was observed in the study. Packed red blood cells are commonly used during blood transfusions to replenish hemoglobin levels and restore oxygen-carrying capacity. Adequate fluid resuscitation is crucial in maintaining maternal hemodynamic stability and ensuring sufficient blood flow to the placenta.

Electronic fetal monitoring was performed for the majority of patients in the study. This finding underscores the importance of monitoring the baby's condition during antepartum hemorrhage cases. Electronic fetal monitoring allows healthcare providers to assess the fetal heart rate and identify signs of fetal distress or compromised oxygen supply. Emergency intervention, including prompt surgical intervention, was necessary for a significant number of patients. This highlights the critical nature of antepartum hemorrhage in some presentations and the need for immediate medical attention to control bleeding and prevent further complications. For those that had emergency caesarean section, it was done within 4-8hours after presentation. An earlier study by Omotayo RS, et al. [17] in same hospital revealed decision-delivery interval for emergency caesarean section for emergency obstetrics condition like fetal distress to be 3-3.5 hours. It is essential to have a skilled obstetric surgical team readily available to perform interventions such as cesarean delivery when necessary. Furthermore, the presence of pediatricians for potential resuscitation of the baby signifies a comprehensive approach to care, ensuring that both the mother and the baby receive appropriate attention in cases of antepartum hemorrhage. This aligns with the standard of care for managing high-risk obstetric cases, where a multidisciplinary team is involved to improve maternal and neonatal outcomes [18].

As evident, this study sheds light on various aspects of effective management strategies. The identification of placenta previa as the most common cause, prompt surgical interventions, utilization of resources like blood transfusions and fluid resuscitation, electronic fetal monitoring, and the presence of pediatricians contribute to comprehensive care for antepartum hemorrhage patients.

Maternal and Perinatal Outcomes Antepartum Haemorrhage Management in UNIMEDTH, Akure Complex

The findings of this study suggest that antepartum hemorrhage can have various negative outcomes, premature delivery, increased risk of caesarean delivery, poor neonatal outcome and need for blood transfusion. These outcomes are consistent with previous research that has identified these complications as potential consequences of antepartum hemorrhage [19,20]. The study observed that most negative outcomes associated with antepartum hemorrhage were relatively minimal among the respondents in the present study, with only a minority experiencing these consequences. Additionally, this finding is comparable to that of Cotton, et al. (2017) who conducted a study in Nkuzu, a community in South Africa. They found that 83.2% of pregnant patients with APH in their study had similar outcomes. It is important to note that the context of the study and the management protocols implemented at the healthcare facility may have contributed to these favorable outcomes. Prompt medical attention, appropriate interventions, and comprehensive care can significantly reduce the chances of severe consequences associated with antepartum hemorrhage.

Premature delivery, on the other hand, refers to the birth of the baby before reaching full term. Antepartum hemorrhage can cause complications such as placental detachment otherwise known as abruption placenta, fetal distress which may necessitate premature delivery to ensure the well-being of the baby and mother. While the study reports that the consequences of antepartum hemorrhage were minimal among the respondents, it is crucial to recognize that these findings may not be representative of all cases of antepartum hemorrhage. The severity of the consequences can vary depending on factors such as the underlying cause of hemorrhage, the timing of intervention, and the overall health of the mother and baby.

Relationship between the Management approach and Management Outcome of Antepartum Haemorrhage among Pregnant Women

The study also found a significant relationship between the management strategy used and the management outcomes of

APH among pregnant women. This indicates that the specific interventions and treatment strategies which constitute the management strategy employed in the study location were effective in improving the outcomes for women with APH. Antepartum haemorrhge management strategy includes admission for conservative management when bleeding is minimal called McCafe regimen or immediate intervention surgically when bleeding is significant or there is obvious fetal/maternal compromise. The effective management of APH typically involves timely and appropriate interventions. Studies have shown that systematic management strategy, including blood transfusions, and timely delivery if necessary, can significantly reduce maternal morbidity and mortality associated with APH [21,22]. Therefore, the implementation of effective management strategy is crucial for improving outcomes in women with APH. The findings of this study therefore suggest that the obstetric history of pregnant women is associated with the occurrence of APH, and the management protocol used plays a significant role in improving the outcomes for women with APH. It underscores the importance of considering obstetric history and implementing effective management strategy in the care of pregnant women with APH.

Conclusion

The study found among others, prevalence of antepartum hemorrhage among pregnant women in a specific location to be 2.1%. Placenta previa was the most common cause, and effective management strategies were employed, including blood transfusions and electronic fetal monitoring. Public health strategies geared towards reducing rate of caesarean section will go a long way in reducing incidences of tendency for placenta previa and indirectly, antepartum haemorrhage.

References

1. Onebunne CAC, Aimakhu CO (2019) Prevalence and pregnancy outcomes in patients with antepartum haemorrhage in a tertiary hospital in Ibadan, Nigeria. International Journal of Reproduction, Contraception, Obstetrics and Gynecology 8(7): 2631-2637.

2. WHO (2019) Trends in maternal mortality 2000-2017 Estimated by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. United Nations Population Fund pp: 104.

3. Olamijulo JA, Olorunfemi G, Okunola H (2022) Trends and causes of maternal death at the Lago University Teaching Hospital, Lagos Nigeria (2007-2019). BMC Pregnancy Childbirth 22: 360.

4. Patwardhan M, Eckert LO, Spiegel H, Pourmalek F, Cutland C, et al. (2016) Maternal death: Case definition

and guidelines for data collection, analysis, and presentation of immunization safety data. Vaccine 34 (49): 6077-6083.

5. Federal Ministry of Health (2019) FG sets to reduce maternal mortality: approves 25BN for 8800 Facilities through NPHCDA, NHIA.

6. Omoruyi G (2008) Causes of Maternal Mortality in Nigeria. Sunday Observer.

7. Kulkarni AR, Shirsath AS (2021) Study of antepartum hemorrhage and its maternal and perinatal outcome at a tertiary care hospital. International Journal of Reproduction, Contraception, Obstetrics and Gynaecolog 10(6): 2210-2214.

8. Audu LI, Otuneye AT, Mairami AB, Mukhtar-Yola M, Mshelia LJ, et al. (2020) Gestational age-relatedneonatal survival at a tertiary health institution in Nigeria: The age of fetal viability dilemma. Nigerian Journal of Paediatrics 47(2): 61-67.

9. Abas LA, Jawad AK (2023) Maternal Risk Factors and Perinatal Outcome in Women with Abruptio Placenta. Advanced Medical Journal 8(2): 38-46.

10. Ananth CV, Smulian JC, Vintzileos AM (2003) The effect of placenta previa on neonatal mortality: a population-based study in the United States, 2019 through 1997. American Journal of Obstetrics and Gynecology 188(5): 1299-1304.

11. Takai IU, Sayyadi BM, Galadanci HS (2017) Antepartum Haemorrhage: A retrospective Analysis from a Northern Nigerian Taeching Hospital. Int J Appl Basic Med Res 7(2): 112-116.

12. Fan D, Wu S, Liu L, Xia Q, Wang W, et al. (2017) Prevalence of Antepartum Haemorrhage in Women with Placenta Praevia : A Systemitic Review and Meta-analysis. Sci. Rep 7: 40320.

13. Giordano R, Cacciatore A, Cignini P, Vigna R, Romano M (2010) Antepartum Haemorrhage. J Prenat Med 4(1): 12-16.

14. Wekere FCC, Kua PL, Akani AB, Bademosi A (2021) Prevalence, maternal and perinatal sequelae of antepartum haemorrhage in a tertiary hospital in South-Soiuth Nigeria. Int J Clin Obstet Gynaecol.; 5(5): 206-210.

15. Adegbola O, Okunnowo AA (2010) Pattern of Antepartum Haemorrhage at the Lagis University Teaching Hospital, Lagos Nigeria. Nigerian Medical Practitioner 58(3): 41-49.

16. Bako B, Audu BM, Chama CM, Kyari O, Idrissa AA (2008) An 8-year clinical review of antepartum haemorrhage at the University of Maiduguri Teaching hospital, Maiduguri. Borno medical journal. 5(2): 14-21.

17. Omotayo RS, Akinsowon OR, Bello EO, Akadiri O, Akintan AL, et al. (2019) Fetal distress, options of Anesthesia, and Immediate Post-delivery Outcome at State Specialist Hospital Akure. Trop J Obstet Gynaecol 36: 424-430.

18. Pandelis KA, Karolina A, Samina MD (2012) Antepartum Haemorrhage. Obstetrics, Gynaecology & Reproductive Medicine 22(1): 21-25.

19. Kohei N, Matsuda Y, Udagawa Y, et al. (2013) The perinatal effects of placenta previa. Arch Gynecol Obstet 288(2): 337-342.

20. Faiz N, Anjum H, Iftikhar A, Khan A, Khan F, et al. (2018) Placenta previa: Maternal and fetal outcomes. Annals of King Edward Medical University 24(3): 374-378.

21. Smith J, Shakespeare J, Murchison A, Charnock C, Crichton L (2018) Managing major obstetric haemorrhage: a new protocol. BMJ Open Quality 7(2): e000372.

22. WHO (2018) Maternal Mortality. World Health Organization.