

**MAGNITUDE, SOCIO-DEMOGRAPHIC CHARACTERISTICS AND RISK FACTORS OF
PRIMARY POSTPARTUM HAEMORRHAGE: A RETROSPECTIVE REVIEW IN A
TERTIARY HOSPITAL IN JIGAWA, NORTH-WEST NIGERIA****Abdullahi Abba Habib*¹, Nabila Ado Ya'u² and Achanya Enemona Sunday³**¹Department of Obstetrics and Gynaecology, Federal University Dutse/Rasheed Shekoni Federal University Teaching Hospital, Dutse, Nigeria.²Department of Haematology, Federal University Dutse/ Rasheed Shekoni Federal University Teaching Hospital, Dutse, Nigeria.³Department of Obstetrics and Gynaecology, Federal Medical Centre Azare, Nigeria.***Corresponding Author: Dr. Abdullahi Abba Habib**

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ABSTRACT

Introduction: Postpartum hemorrhage is a major cause of maternal mortality, with most of the death occurring within the first 24 hours following delivery. Early identification of women at risk of primary PPH is a known contribute to its prevention and management. **Objective:** To determine the prevalence, causes and risk factors of primary postpartum hemorrhage. **Materials and methods:** It was a retrospective study carried out in the department of Obstetrics and Gynaecology of Rasheed Shekoni Federal University Teaching Hospital. Data obtained was analyzed with IBM SPSS version 21.0. Measured variables were expressed in percentage. Test for association was done using chi-square non-parametric test, setting P-value at <0.05. **Results:** The prevalence of PPH in this study was 3.31%. The mean age of the women was 27.33± 5.9. Majority (54.2%) of the women were multiparous. Uterine atony was the most common cause of PPH and induction of labour was the most common (18.8%) risk identified. **Conclusion:** The prevalence of PPH in this study was 3.31%. Induction of labour, grandmultiparity, fetal macrosomia and caesarean section were prevalent risk factors in Primary PPH.

KEYWORD: Postpartum, hemorrhage, Atony, Jigawa.**INTRODUCTION**

Globally more women of reproductive age die annually from complications associated with pregnancy and childbirth. Almost all the maternal mortality occurs in low-and middle-income countries,^[1] and primary postpartum hemorrhage (PPH) is the principal cause.^[2,3]

PPH is defined as bleeding from the genital tract in excess of 500 milliliters (ml) following vaginal delivery or excess of 1000mls following Caesarean section (CS).^[4] The "reVITALIZe" program of the American College of Obstetricians and Gynecologist (ACOG)^[5] defined PPH as an increasing blood loss of 1000mls or blood loss followed by signs and symptoms of hypovolemia within 24 hours of birth.^[5] The later definition is not applicable in low-and middle-income countries as parturient in these countries are likely to develop profound cardiovascular instability with blood loss of 500mls or less.^[6] Furthermore, PPH is defined as any blood loss that leads to hemodynamic instability, a 10% drop in hematocrit from the baseline or blood loss requiring transfusion of blood products.^[7] The latest

clinical definition is more practical and applicable to low resource countries.

The prevalence of PPH is estimated to be 6% globally with the highest burden in low-income countries.^[8] The prevalence of PPH in Uganda, Cameroun, Pakistan, and Netherlands was 7.4%, 23.6%, 6.0%, and 6.4% respectively.^[8,9,10,11] In Nigeria, the prevalence in Nnewi and Ilorin was 1.13% and 4.5% respectively.^[12,13]

Primary PPH occurs as a result of uterine atony, retained placental tissue, genital tract trauma and coagulation problem.^[14] Factors associated with PPH include maternal age of 35years and above, grand-multiparity, multiple pregnancy, fetal macrosomia, induction of labour, hypertensive disorders, anaemia in pregnancy, operative vaginal delivery, Caesarean section and chorioamnionitis.^[8,9,15,16,17,18,19]

The magnitude of PPH and its bad outcome is still a major problem in developing countries including sub-Saharan Africa.^[20] Okonufua et al identified some factors associated with rise in the prevalence of PPH in Nigeria.

These factors include lack of strategy and commitments by health facility managers towards prevention and management of PPH; limited knowledge of current methods and protocols of prevention and management of PPH; inadequate facilities and drugs for the provision of emergency obstetric care and pregnant women's poor knowledge of PPH, its prevention and treatment.^[21] The causes and risk factors of PPH are relatively different across studies and regions.^[14,15] Although PPH can occur without any risk factor;^[22] knowledge of population and area specific risk factors is important in its early identification and prevention.^[15] Hence, this study aims to determine the prevalence, causes and risk factors of primary postpartum hemorrhage in Rasheed Shekoni Federal University Teaching Hospital (RSFUTH) Dutse, Nigeria.

MATERIAL AND METHOD

The study was a retrospective review of cases of primary postpartum hemorrhage in the department of Obstetrics and Gynecology of RSFUTH between 1st September 2021 and 31st August 2023. RSFUTH is one of the tertiary health facilities in Jigawa state. It serves as a referral centre for patients within Jigawa and neighbouring states.

The study participants were all the women with documented blood loss from genital tract within 24 hours of delivery in excess of 500mls following vaginal delivery and 1000mls following caesarean section; or blood loss following delivery irrespective of quantity that required blood transfusion. Their case notes were retrieved from the record department. Relevant information obtained included socio-demographic data, parity, booking status, mode of delivery and delivery outcome.

The data obtained was checked for completeness and accuracy. Data analysis was carried out using IBM statistical package for social sciences (SPSS) version 21.0. Measured variables were expressed in descriptive statistics; mean \pm SD for normally distributed quantitative variables. Qualitative variables were expressed in frequencies and percentage. Test for association was done using Chi-square non-parametric test setting P- value at < 0.05 . The study was carried out after obtaining approval from the Health Research and Ethics committee of Rasheed Shekoni Federal University Teaching Hospital Jigawa, Nigeria.

RESULTS

There were 157 deliveries during the period under review; out of which 52 were cases of primary PPH, thus giving a prevalence of 3.31%. However, 48 (92.3%) case notes were retrieved from record department for analysis. The mean age of the patients was 27.33 ± 5.9 years, with a range of 19-36 years. Majority (37.5%) of the women were between the age group of 20-24 years. Additionally, majority of the women reside in urban areas (70.8%). Most of the women were homemakers (72.9%) and had

secondary school certificate as their highest level of education (41.7%). The socio-demographic characteristics are shown in Table 1.

Table 1: Socio-demographic characteristics.

Variables	Frequency (n)	Percentage (%)
Age – mean age= 27.33 \pm 5.9, range= 19-36		
≤ 19	2	4.2
20-24	18	37.5
25-29	10	20.8
30-34	10	20.8
≥ 35	8	17.7
Total	48	100
Education		
No formal or Qur'anic	8	16.7
Primary	14	29.2
Secondary	20	41.7
Tertiary	6	12.5
Total	48	100
Employment status		
Homemaker	35	72.9
Civil servant	8	16.7
Business	4	8.3
Student	1	2.1
Total	48	100
Residence		
Urban	34	70.8
Rural	14	29.2
Total	48	100

The Obstetric characteristics of the participants are shown in Table 2. The mean parity was 3.04 ± 1.8 , with a range of 1-7. Majority (54.2%) of the women were multiparous. More so, most of these women were booked (75%) and had vaginal delivery (87.5%).

Table 2: Obstetric characteristics

Variable	Frequency (n)	Percentage (%)
Parity – mean parity= 3.04 \pm 1.8, range= 1-7		
1	12	25.0
2-4	26	54.2
≥ 5	10	20.8
Total	48	100
Booking status		
Un-booked	12	25.0
Booked at delivery facility	12	25.0
Booked elsewhere	24	50.0
Total	48	100
Route of delivery		
Vaginal delivery	42	87.5
Caesarean delivery	6	12.5
Total	48	100

As shown in figure 1, uterine atony was the most common cause of PPH (64.6%). Genital tract trauma,

retained placenta and coagulopathy accounted for 29.2%, 4.2% and 2.1% respectively.

A significant number (39.6%) of the women had no identifiable risk factor. While majority (56.2%) had one risk factor, a few (4.2%) had multiple risk factors. One of the women was grand-multiparous and had fetal macrosomia and the other was above 35 years, grand-multiparous and had chorioamnionitis. Induction of labor (10L) was the most common (18.8%) risk identified among those with uterine atony. However, 10 (31.3%)

women from this group had no identifiable risk factor. Other risk factors identified among those with uterine atony were grand-multiparity (12.5%), fetal macrosomia (12.5%), multiple pregnancy (6.2%), age of ≥ 35 years (6.2%) and others (12.5%). Majority (35.7%) of the women with spontaneous genital tract trauma had no identifiable risk factor. However, among those with induced genital tract trauma, 5(35.7%) had caesarean section and 2 (14.3%) had extension of episiotomy. This is illustrated in Table 3.

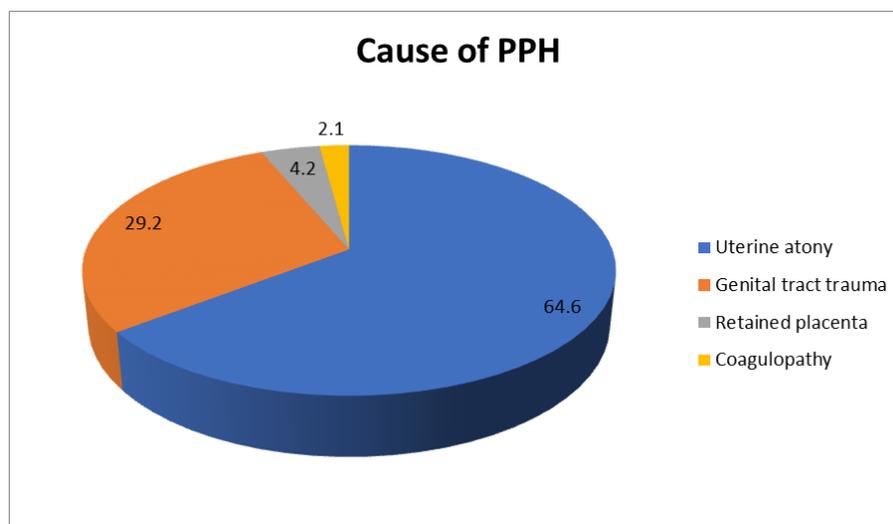


Figure 1: Cause of postpartum hemorrhage in percentage.

Table 3: Risk Factors Associated with Postpartum Hemorrhage.

Variable	Frequency (n)	Percentage (%)
I-Risk factors n=48		
No risk factor	19	39.6
One risk factor	27	56.2
Two risk factors	1	2.1
Three risk factors	1	2.1
II-Uterine atony n=31 (64.6%)		
No risk factor	10	31.3
Induction of labour	6	18.8
Grand-multiparity	4	12.5
Fetal macrosomia	4	12.5
Multiple pregnancy	2	6.2
Age ≥ 35 years	2	6.2
Others	4	12.5
III-Genital tract trauma n=14 (29.2%)		
1-Spontaneous		
Nulliparity	2	14.3
No risk factor	5	35.7
2- Induced		
Caesarean section	5	35.7
Extension of episiotomy	2	14.3
IV- Retained placenta n=2 (4.2%)		
V- Coagulopathy n=1 (2.1%)		

The mean blood loss among women with uterine atony was 1618 ± 851 mls and blood loss range of 600 – 3000mls. The only woman with coagulopathy had blood

loss of 1800mls. The mean unit of blood transfused to women with uterine atony was 2.16 ± 2.0 unit, with a maximum of 4 units of blood transfused.

Table 4: Amount of blood loss and unit of blood transfusion.

Variable	Causes of Primary postpartum hemorrhage			
	Uterine atony	Genital tract trauma	Retained placenta	Coagulopathy
I-Blood loss				
Mean	1618±851	1271±581	1350±212	--
Maximum loss	3000	2500	1500	1800
II-Blood transfusion				
Mean	2.16±1.2	1.36±1.3	--	--
Maximum unit	4	3	3	4

DISCUSSION

The Prevalence of PPH varies relatively from one region to another. The prevalence of PPH in this study is 3.31%. This is similar to the findings of systematic review of 12 studies in Africa.^[22] However, it is higher than 1.13% in Nnewi south-east Nigeria and 2.4% in Kano north-west Nigeria.^[12,23] On the contrary, the prevalence is lower than 4.8% in Port Harcourt.^[24] The prevalence in this study is also lower than the prevalence reported in Ethiopia, Cameroun and Pakistan.^[9,10,20] The variation in PPH prevalence among studies could be due to difference in study setting and sample size, method of quantification of blood loss, access to antenatal care and practice of active management of third stage of labour (AMTSL).

Most of the women were homemakers, multiparous and had secondary school leaving certificate as the highest-level education. This is in agreement with the findings of Garba *et al.*^[23] Most (75%) of the women in this study booked for antenatal care. This is in contrast to the reports in Kano, Port Harcourt and Ethiopia where majority of the women were un-booked.^[20,23,24] Pregnant women who attend antenatal care may be screened early for risk factors PPH, get treated early or benefit from planned PPH prevention at delivery.

Uterine atony was the commonest cause of PPH in this study (64.6%). This is consistent with findings of some studies.^[4,10,23,24] AMTSL was found to lower the occurrence of PPH especially due to uterine atony and has been suggested for the regular management of spontaneous deliveries.^[26,27] AMTSL is routinely practiced in the study hospital.

In current study, induction of labour (IOL) was associated with increased risk of uterine atony. Other identified risks were grand-multiparity and fetal macrosomia. Additionally, caesarean delivery, extension of episiotomy and nulliparity were also identified as risk of genital tract trauma in this study. PPH often occurs in the absence of known risk factor⁽²²⁾. Risk factors of PPH can change or evolve throughout all the stages of pregnancy and labour; as such risk assessment should be undertaken during the antepartum, intra-partum and early postpartum periods.^[28]

Regarding the amount of blood loss; uterine atony was associated with more blood loss when compared to other

causes of PPH in this study. The mean blood loss following uterine atony was 1618±851mls with a maximum individual blood loss of 3000mls. The only woman with coagulopathy had estimated blood loss of 1800mls. In current study, visual method was used to quantify the blood loss following delivery. This method is grossly subjective and underestimates the actual blood loss by 30 – 50%.^[25]

LIMITATION

This was a tertiary hospital-based study as such may not reflect the true representation of the population. Visual method of blood loss estimation used in this study underestimates the amount of blood loss.

CONCLUSION

The prevalence of PPH in this study was 3.31%. Induction of labour, grand-multiparity, fetal macrosomia and caesarean section were prevalent risk factors in Primary PPH. Early identification of risk factors and prevention of PPH should be prioritized by health providers and facility managers. Method of blood loss estimation should also be improved.

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