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Perinatal outcome in Patients Presented with Antepartum Hemorrhage

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ABSTRACT

Background: Antepartum hemorrhage is an obstetric complication that can result in unfavorable maternal and perinatal outcomes. Identification and management of APH play an important role in enhancing the survival rates among mothers and neonates. Several factors, such as gestational age, parity, and placental pathology, influence the outcome in cases of APH, yet their association with complication severity is intricate and not fully investigated. **Objective:** To determine the frequency of perinatal outcomes in patients presenting with antepartum hemorrhage. **Study Design:** Descriptive cross-sectional study. **Duration and Place of Study:** The study was conducted from April 2024 to October 2024 at the Department of Obstetrics and Gynaecology, ATH Abbottabad. **Methodology:** The study included 113 women aged 18-40 years with singleton pregnancies of more than 28 weeks gestation, who presented with APH. Demographic data, including age, gestational age, parity, BMI, and residential status, were recorded. Patients were monitored for perinatal outcomes such as low birth weight, stillbirth, and neonatal death. **Results:** The study found that 38.9% of participants had low birth weight, 20.4% experienced stillbirth, and 14.2% had neonatal death. Stratified analyses showed that gestational age ≤35 weeks was significantly associated with low birth weight, with a p-value of 0.004. Parity was also significantly associated with low birth weight, as women with fewer previous pregnancies had a higher incidence of low birth weight (p-value = 0.013). For stillbirth, a significant association was found with gestational age ≤35 weeks (p-value = 0.012), but no significant association was found with parity (p-value = 0.213). **Conclusion:** Our study concludes that antepartum hemorrhage remains a major determinant of adverse maternal and perinatal outcomes.

INTRODUCTION

Antepartum hemorrhage (APH) is bleeding following 20 weeks' gestation but before the onset of labor.[1] This is one of the most severe obstetric complications that arises due to multiple reasons, such as placenta previa, placental abruption, or vasa previa.[2] APH leads to fetal and maternal distress, while clinical examination, ultrasonography, and other tests are used for its recognition.[3] The severity of APH is dependent on the inducing cause, blood volume, and gestational age at bleeding.[4] APH is still one of the major causatives behind fetal as well as maternal morbidities, and proper management will have an essential role in avoiding adverse outcomes.[5]

The perinatal outcome in antepartum hemorrhage is dependent on bleeding timing, volume, and etiology.[6] In early pregnancy, bleeding results in miscarriage or pregnancy loss if there is related major placental abnormality.[7] In advanced pregnancy, APH is complicated by preterm labor, low delivery weight, and other perinatal complications.[8] Monitoring, inpatient treatment, and emergency interventions like blood transfusion, corticosteroid administration, or cesarean delivery prevent such complications.[9]

One of the most serious consequences in pregnancies complicated by APH is that it results in Low Birth Weight.[10] In cases of APH caused by placental abruption or placenta previa, for example, APH can result in placental compromise in blood flow, with associated compromised fetal growth.[11] Associated reduced fetal oxygenation and nutrition resulting from this can inhibit growth normally, resulting in LBW.[10] Prevalence studies have all noted that LBW is more common in pregnancies complicated by APH, with severity in bleeding corresponding to severity in growth restriction.[12] LBW babies have increased risks for many complications including respiratory distress, intolerance to feeding, and prolonged delays in development.[13]

Antepartum hemorrhage is a known risk factor for stillbirth and neonatal death, particularly in heavy or prolonged bleeding.[14] The risks increase in complicated cases with placental abruption, in which premature placental separation from the uterine wall compromises

fetal oxygenation. Intrauterine fetal demise (stillbirth) is likely to follow more serious cases.[15] Complicated APH is at increased risk for neonatal mortality because preterm babies have added risks for respiratory failure, infection, and intraventricular hemorrhage.[16] Early medical intervention in administration of steroids to accelerate fetal pulmonary development or expedient delivery in more serious cases is a vital step in minimizing mortality, but stillbirth and risks for neonatal mortality are present in complicated situations.

A study conducted by Dahri B et al. demonstrated that the frequency of low birth weight was 53.79%, stillbirth was 42.42%, and neonatal death occurred in 17.42% of patients presenting with antepartum hemorrhage.[17]

The need to conduct this study on perinatal outcomes for individuals with antepartum hemorrhage is triggered by high rates of adverse outcomes, such as stillbirth, low birth weight, and death of infant, that have been attributed to this condition. Antepartum hemorrhage's frequent sequela, low birth weight, is to blame for multiple future health complications in infant. Also, stillbirth and neonatal death in such individual's highlight seriousness of risks with this condition, affirming an urgent need for an in-depth study of such outcomes.

METHODOLOGY

This descriptive study was conducted from April 2024 to October 2024 at the Department of Obstetrics and Gynaecology, ATH Abbottabad. The sample consisted of 113 women who presented with antepartum hemorrhage. The sample size was determined using the WHO software, applying a 95% confidence level, a 7% margin of error, and an expected neonatal death frequency of 17.42%.[17] Inclusion criteria comprised women aged 18 to 40 years, with singleton pregnancies confirmed by ultrasound, a gestational age of more than 28 weeks based on the last menstrual period (LMP), and any parity. Patients with bleeding from the genital tract occurring before delivery, with blood loss ranging from 50 to 1000 ml, were included in the study. Women with congenital anomalies detected on ultrasonography, a prior history of coagulation disorders, or hypertension/preeclampsia were excluded.

Demographic data, such as age, gestational age, parity, body mass index (BMI) and residential status, were recorded. Following hospital protocol, patients with hemoglobin levels below 8 mg/dL were given a blood transfusion. They were monitored every four hours, with observations of pulse, blood pressure, temperature, and fetal heart sounds until delivery. The study focused on tracking perinatal outcomes, specifically low birth weight, stillbirth, and neonatal death. Low birth weight was defined as a birth weight less than 2,500 grams measured at delivery, while stillbirth referred to fetal loss at or after 28 weeks of gestation, confirmed by ultrasound, and neonatal death was noted when no signs of life, including breathing or heartbeats, were detected upon physical examination during the mother's hospital stay. Patients were followed up until delivery, and the outcomes were noted on a specially designed proforma.

Data analysis was carried out using SPSS version 26. Categorical variables, such as residential status, low birth weight, stillbirth, and neonatal death, were presented as frequencies and percentages. For quantitative variables, including age, gestational age, BMI and parity, the mean ± standard deviation or median (interquartile range) was calculated, depending on the normality of the data, which was assessed using the Shapiro-Wilk test. Stratification of perinatal outcomes by age, gestational age and parity was performed. Post-stratification, the chi-square test or Fisher's exact test was applied, with $p \leq 0.05$ considered statistically significant.

RESULTS

The descriptive statistics of the study participants revealed the following demographics: the average age of the participants was 28.19 years (SD = 5.44), the mean gestational age was 32.35 weeks (SD = 2.82), and the average BMI was 26.84 (SD = 3.34). The average parity was 1.61 (SD = 1.23). Regarding residential status, 74 participants (65.5%) lived in rural areas, while 39 (34.5%) resided in urban areas (as shown in Table-I).

Table I

Descriptive Statistics

Demographics	Mean± SD
Age (years)	28.19± 5.44
Gestational age (weeks)	32.35± 2.82
BMI	26.84± 3.34
Parity	1.61± 1.23
Residential Status (Rural) n(%)	74 (65.5%)
Residential Status (Urban) n(%)	39 (34.5%)

The pregnancy outcomes were as follows: 44 cases (38.9%) resulted in low birth weight, 23 cases (20.4%) had stillbirth, and 16 cases (14.2%) resulted in neonatal death (as shown in Table-II).

Table II

Pregnancy Outcomes

Outcomes	Frequency	% age
Low Birth Weight	44	38.90%
Still Birth	23	20.40%
Neonatal Death	16	14.20%

Stratified analyses regarding low birth weight showed that participants aged ≤30 years had 33 cases (44.6%) with low birth weight, while 41 (55.4%) did not, with a p-value of 0.089. For participants older than 30 years, 11 (28.2%) had low birth weight, and 28 (71.8%) did not. For gestational age ≤35 weeks, 42 (45.2%) had low birth weight, while 51 (54.8%) did not, and the association was statistically significant with a p-value of 0.004. For those with gestational age >35 weeks, only 2 (10%) had low birth weight, while 18 (90%) did not. Parity showed a significant association, with 39 (45.9%) of those with parity between 0 and 2 having low birth weight, compared to 46 (54.1%) who did not (p-value = 0.013), whereas 5 (17.9%) of those with parity >2 had low birth weight, compared to 23 (82.1%) without low birth weight (as shown in Table-III).

Table III

Association of Demographics with Low Birth Weight

Demographic Factors	Low Birth Weight	No Low Birth Weight	p-value
Age (≤30)	33 (44.6%)	41 (55.4%)	0.089
Age (>30)	11 (28.2%)	28 (71.8%)	
Gestational Age (≤35)	42 (45.2%)	51 (54.8%)	0.004*

Gestational Age (>35)	2 (10.0%)	18 (90.0%)	
Parity (0-2)	39 (45.9%)	46 (54.1%)	0.013*
Parity (>2)	5 (17.9%)	23 (82.1%)	

***Fischer Exact Test**

When assessing stillbirth, participants aged ≤30 years had 12 cases (16.2%) with stillbirth, and 62 (83.8%) without stillbirth, while those aged >30 years had 11 cases (28.2%) with stillbirth, and 28 (71.8%) without, with a p-value of 0.132. For gestational age ≤35 weeks, 23 (24.7%) experienced stillbirth, while 70 (75.3%) did not, with a significant association (p-value = 0.012). For gestational age >35 weeks, none had stillbirth, and all 20 participants did not experience stillbirth. Regarding parity, 15 (17.6%) participants with parity between 0 and 2 had stillbirth, while 70 (82.4%) did not, with a p-value of 0.213. In contrast, 8 (28.6%) participants with parity >2 had stillbirth, and 20 (71.4%) did not (as shown in Table-IV).

Table IV

Association of Demographics with Still Birth

Demographic Factors	Still Birth	No Still Birth	p-value
Age (≤30)	12 (16.2%)	62 (83.8%)	0.132
Age (>30)	11 (28.2%)	28 (71.8%)	
Gestational Age (≤35)	23 (24.7%)	70 (75.3%)	0.012*
Gestational Age (>35)	0 (0.0%)	20 (100.0%)	
Parity (0-2)	15 (17.6%)	70 (82.4%)	0.213
Parity (>2)	8 (28.6%)	20 (71.4%)	

***Fischer Exact Test**

Concerning neonatal death, participants aged ≤30 years had 12 cases (16.2%) of neonatal death, and 62 (83.8%) did not, while those aged >30 years had 4 cases (10.3%) with neonatal death, and 35 (89.7%) without. The p-value was 0.418, indicating no significant association. For gestational age ≤35 weeks, 16 (17.2%) had neonatal death, while 77 (82.8%) did not, with a p-value of 0.071. No neonatal deaths were observed in participants with gestational age >35 weeks, where all 20 participants survived. Parity had no significant association, with 12 (14.1%) participants with parity between 0 and 2 experiencing neonatal death, compared to 73 (85.9%) without, and 4 (14.3%) of those with parity >2 had neonatal death, compared to 24 (85.7%) without (as shown in Table-V).

Table V

Association of Demographics with Neonatal Death

Demographic Factors	Neonatal Death	No Neonatal Death	p-value
Age (≤30)	12 (16.2%)	62 (83.8%)	0.418*
Age (>30)	4 (10.3%)	35 (89.7%)	
Gestational Age (≤35)	16 (17.2%)	77 (82.8%)	0.071*
Gestational Age (>35)	0 (0.0%)	20 (100.0%)	
Parity (0-2)	12 (14.1%)	73 (85.9%)	1.000*
Parity (>2)	4 (14.3%)	24 (85.7%)	

*Fischer Exact Test

DISCUSSION

The research indicated that some demographic factors, including gestational age, parity, and age, were found to have a significant influence on adverse pregnancy outcomes like stillbirth, underweight at birth, as well as infant mortality. The high prevalence of underweight at birth in women who were younger (≤30 years) suggests that younger women have higher risks for complications after preterm delivery, although this cannot be statistically confirmed. That gestational age ≤35 weeks is strongly associated with underweight at birth substantiates available evidence that preterm labor is linked with complications in the newborn. Greater gestational age is likewise known to have an influence in producing underweight at birth by virtue of immature organs as well as placental insufficiency.

The relation between lower parity (0-2) with low weight at birth implies that women with fewer previous pregnancies may experience complications such as suboptimal placental development or unfavorable condition in the uterus, which may impact fetal development. Higher parity (≥3) revealed decreased incidence with respect to weight at birth, implying more adaptation on the part of mother to pregnancy because she has been pregnant before. Gestational age ≤35 weeks revealed an independent relation with stillbirth, affirming the relation between preterm delivery with stillbirth. Preterm babies have intrauterine death because their organs were not fully developed, whereas gestational age >35 weeks revealed lesser risks for stillbirth, affirming full-term delivery in preventing perinatal mortality.

Demographically, respondents to our study were 28.19 years old on average (SD = 5.44), at an average gestational age of 32.35 weeks (SD = 2.82), and an average BMI of 26.84 (SD = 3.34). The majority of respondents were from resident backgrounds in rural areas (65.5%), which could lead to increased complication rates due to the fact that such communities have limited urgent care as well as other higher-level medical interventions. The demographics match that in studies such as that by Rathi et al. in which patient age range and gestational age at delivery were in similar parameters, indicating that there is an even pattern throughout but that their study was not focusing on urban-rural split.[18]

Regarding pregnancy outcomes, 44 cases (38.9%) in our study resulted in low birth weight (LBW), which is consistent with findings from Jharaik et al., where a significant portion of their neonatal population had low birth weight due to prematurity.[19] The perinatal mortality rate in our study was 27%, with 23 cases of stillbirth (20.4%) and 16 cases of neonatal death (14.2%). This is similar to the findings of Jain et al., who reported a significantly higher perinatal mortality in cases of abruptio placenta, with low birth weight and stillbirths being major contributors to this.[20] In both studies, prematurity and the need for neonatal intensive care were key factors affecting outcomes, similar to the findings by Kulkarni and Shirsath, who also noted that prematurity was the most common neonatal complication.[21]

Our study also explored stratified analyses regarding low birth weight, stillbirth, and neonatal death. For low birth weight, participants with gestational age ≤35 weeks had a significant association (p-value = 0.004), which mirrors findings from Behera et al., where prematurity was identified as a major risk factor for low birth weight and perinatal mortality in both placenta previa and abruptio placenta cases. However, our study did not show a significant association between neonatal death and parity, a finding that contrasts with studies by Mushtaq et

al., where parity was linked to higher rates of perinatal complications, particularly in those with higher parity.[22,23]

When comparing the results of stillbirth, our study observed that 16.2% of participants under 30 years had stillbirths, which is similar to findings from Anjankar et al., where placental abruption cases had significantly higher stillbirth rates (41.1%) compared to placenta previa.[24] The lack of a significant association between stillbirth and parity in our study is in line with studies such as that of Kulkarni and Shirsath, where parity was not a strong predictor of stillbirth outcomes in APH cases.[21]

In terms of neonatal death, we observed no significant difference between the two age groups (≤30 years vs. >30 years), with a similar finding from Rathi et al., who reported that maternal age did not strongly affect the rate of neonatal death, though other factors such as placental complications played a more prominent role in determining neonatal outcomes.[18] Our study's findings on the minimal effect of parity on neonatal death contrast with studies by Behera et al. and Anjankar et al., where higher parity was associated with increased neonatal mortality, particularly in cases of abruptio placenta.[23,24]

Low birth weight, stillbirths, and neonatal death rates seen in this study align with global observations but incorporate healthcare access in their regions as well as urban-rural health disparities which need to be tackled for improved results. The results again emphasize the importance of early diagnosis, early intervention, and stringent standards for antenatal care, notably in such rural areas where healthcare centers may not exist.

However, there are some limitations to this study. Being from one center, it is not completely representative for all populations. The study sample, while adequate, may not demonstrate all perinatal outcome heterogeneity in all populations and areas. Finally, variables such as socioeconomic status, more specific maternity-related comorbidities, and availability of healthcare were not proactively pursued to potentially explain some outcome heterogeneity. Further multi-center trials with greater sample numbers along with more detailed examinations of maternity-related factors would more fully explain APH and related outcomes.

CONCLUSION

From our research, we have concluded that antepartum hemorrhage remains to be an essential risk factor for unfavorable perinatal and maternal outcomes, where gestational age, placental pathology, and maternity factors act as determinants for such. Findings highlight early diagnosis, timely intervention, and improved antenatal care of utmost significance in places where healthcare is not accessible. Findings highlight the significance of early referral, efficient management practices, and accessibility to neonatal intensive care in averting perinatal morbidity as well as mortality in the event of APH.

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