

A RETROSPECTIVE STUDY ON MATERNAL AND PERINATAL OUTCOMES IN PREGNANT WOMEN WITH ANTEPARTUM HEMORRHAGE

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ABSTRACT

Background: Antepartum hemorrhage (APH) is a complication of pregnancy that can increase risks to both the mother and fetus. The objectives of this study were to determine the proportion, evaluate pregnancy and fetal outcomes in APH, and identify risk factors associated with maternal and perinatal morbidity and mortality. Method: This research used a prospective observational design with secondary data analysis, based on medical records of pregnant women with antepartum hemorrhage treated at RSUD Sidikalang from 2022 to 2025. Data included maternal demographic characteristics, type and cause of hemorrhage, management, as well as maternal and perinatal outcomes. The results : Results: Placenta previa was the main cause of APH, especially in the third trimester and in multigravida women aged 31–35 years. The majority (97.05%) underwent cesarean delivery. No maternal deaths were found. Some postpartum mothers experienced anemia (5.89%). Perinatal outcomes showed a stillbirth rate of (2.94%), low birth weight (5.88%), asphyxia (8.82%), and neonatal jaundice (14.70%) Conclusion: APH remains an important cause of maternal and perinatal morbidity. Recommendations Increasing maternal awareness of routine antenatal check-ups and improving access to health services play a role in reducing the risk of complications related to APH.

Keywords : *antepartum hemorrhage, maternal outcomes, perinatal outcomes*

INTRODUCTION

Health indicators are parameters used to describe the health status of a country or population. In Indonesia, one of the main indicators used to measure health status is the maternal mortality rate (MMR) and infant mortality rate (IMR). Bleeding during pregnancy can threaten the safety of the mother and fetus and is a significant risk factor that affects both indicators.

Antepartum hemorrhage, which occurs during pregnancy before the delivery process, is one of the serious complications that can affect the health of the mother and fetus. Bleeding during pregnancy, whether it occurs in the first trimester or the second and third trimesters, is one of the most significant complications in maternal and fetal health. Bleeding that is not treated immediately can threaten the safety of the mother and fetus, with very serious consequences, such as miscarriage, premature birth, fetal distress, and even maternal death.

Antepartum hemorrhage is bleeding that occurs during pregnancy after 20 weeks of gestation until before labor begins. This bleeding can be caused by various conditions, such as placenta previa, placental abruption, and uterine rupture, which can endanger the mother and fetus (F. Gary Cunningham, Kenneth J. Leveno, Jodi S. Dashe, Barbara L. Hoffman, Catherine Y. Spong, 2022)

The causes of bleeding during pregnancy are diverse and can be influenced by various factors, ranging from harmless physiological conditions to serious medical conditions. Some of the most common causes of bleeding during pregnancy include implantation bleeding, abortion, placenta previa, placental abruption, ectopic pregnancy, and various infections or trauma. Each of these causes has a different impact on the health of the mother and fetus. Placenta previa (the placenta is located at the bottom of the uterus and covers the birth canal) and placental abruption (the placenta detaches from the uterine wall prematurely) are two of the main causes. Both conditions can cause severe bleeding, which requires immediate treatment to prevent further impact on the health of the mother and fetus. In addition, other conditions such as blood clotting disorders, infections, and trauma can also cause antenatal bleeding. (Braun, 2022), (Manuaba, 2009)

In Indonesia, maternal mortality rates (MMR) and infant mortality rates (IMR) remain significant public health issues. Antenatal hemorrhage is one of the main risk factors in these cases, affecting the quality and safety of the delivery process. Antenatal hemorrhage can lead

to premature birth, fetal distress, miscarriage, or even fetal death if not treated properly.

Based on data from the 2020 Population Census, the maternal mortality rate reached 189 per 100,000 live births, placing Indonesia second highest in ASEAN in terms of maternal mortality, far higher than Malaysia, Brunei, Thailand, and Vietnam, which are already below 100 per 100,000 live births. Further efforts are still needed to improve this achievement. More efforts are needed when compared to the 2024 RPJMN target of 183 deaths per 100,000 live births and the Sustainable Development Goals (SDGs) 3.1 target of reducing the MMR to less than 70 deaths per 100,000 live births by 2030. Data from the Maternal Perinatal Death Notification (MPDN), which is the Ministry of Health's maternal mortality recording system, also shows that the number of maternal deaths in 2022 reached 4,005 and in 2023 increased to 4,129 maternal deaths in 2022 caused by eclampsia by 23 percent and bleeding by 20 percent in 2023, with eclampsia causing 24 percent of deaths and bleeding 23 percent. (BPS, 2023), (BPS, 2024) (Redaksi Sehat Negeriku, 2024)

In 2023, the infant mortality rate per 1,000 live births in Indonesia showed a significant increase, with 29,945 infant deaths in 2023, up from 20,882 in 2022. The causes of infant mortality are oxygen deprivation during childbirth or hypoxia and breathing difficulties at birth or asphyxia. Many infant deaths are caused by low birth weight (LBW) or prematurity when babies are born weighing less than 2,500 grams, which is usually experienced by premature babies born before 37 weeks of gestation, according to the United Nations Children's Fund, premature birth is the leading cause of death among children under five years of age, with an estimated 15 million premature babies born worldwide each year. (BPS, 2024), (Rokom and Negeriku, 2024)

Antepartum hemorrhage is bleeding that occurs in the third trimester of pregnancy, which can be caused by several factors and medical conditions that affect the mother and fetus. This bleeding can occur in various cases, such as placenta previa, placental abruption, or other vascular abnormalities that affect the pregnancy process. Complications from antepartum hemorrhage are very dangerous because they can affect maternal and perinatal well-being. The main causes of antepartum hemorrhage are placenta previa, a condition in which the placenta covers part or all of the cervix, and placental abruption, which is the premature detachment of the placenta from the uterine wall. (Putri, 2019)

Placenta previa and placental abruption are two conditions commonly found in cases of

anteartum hemorrhage and can cause severe bleeding. In addition, anteartum hemorrhage can increase the risk of premature birth, low birth weight (LBW), and respiratory disorders in newborns. In mothers, this bleeding can cause hypovolemic shock, severe anemia, and an increased risk of infection, and in extreme cases, can result in maternal death. (Manuaba, 2010)

Despite significant advances in medical technology and obstetric management that have reduced maternal and infant mortality rates, anteartum hemorrhage remains a major challenge in clinical practice. Early detection of anteartum hemorrhage and appropriate and prompt treatment are essential to reduce the negative impact on maternal and perinatal outcomes. Therefore, a thorough understanding of the factors that influence maternal and perinatal outcomes in pregnant women with anteartum hemorrhage is crucial for improving pregnancy outcomes.

Maternal outcomes in cases of anteartum hemorrhage include the possibility of more severe medical complications. Perinatal outcomes, on the other hand, focus more on the baby, with particular attention to prematurity, asphyxia, and perinatal mortality.

METHOD

The method section contains an explanation of the research design, population, sample, variables, time and place, data collection tools and techniques, and data analysis; 15-20% of articles. Explain the research design in detail in order to describe the research process as a whole. The implementation of the research involves anyone with what kind of role and in what way. This research has passed the ethical review and is attached at the time of article submission.

This study uses a retrospective study design that will analyze existing data from the medical records of pregnant women with anteartum hemorrhage. The data to be collected will come from the medical records of patients who have experienced anteartum hemorrhage and given birth in a hospital or clinic within a certain period of time. The inclusion criteria are all pregnant women with anteartum hemorrhage in 2022- September 2025.

RESULTS AND DISCUSSION

The data obtained from this study were classified and presented in the form of tables and diagrams to provide a more informative visualization of the case distribution patterns. The following presents the distribution of gestational age at the time of antepartum hemorrhage based on the study findings.

Tabel 1. Distribution of Respondent Characteristics of Antepartum Hemorrhage at the Regional Public Hospital

No	Respondent Characteristics	Amount	
		Frequency	%
A	Obstetric History		
	20–27 Week	1	2,94
	28–36 Week	24	70,58
	37-40 Week	9	26,48
	Amount	34	100
B	Age Group		
	21-25 year	1	2,94
	26-30 year	12	35,29
	31-35 year	15	44,11
	≥36 year	7	20,58
	Amount	34	100
C	Parity pregnant		
	Primigravida	0	0
	Multigravida	24	70,58
	Grandmultigravida	10	29,41
	Amount	34	100
D	Abortus		
	Yes	1	16,66
	No	33	83,34
	Amount	34	100
E	Gestational age at delivery		
	≤37 minggu	1	2,94
	38–40 Week	4	11,76
	≥ 40 Week	0	26,47
	37-40	18	52,94
	Amount	34	100
F	Bleeding Time		
	Trimester 1	0	0
	Trimester 2	4	11,76
	Trimester 3	30	88,23
	Amount	34	100

G	Accompanying history		
	Hypertension	2	5,88
	Diabetes Mellitus	1	2,94
	Anemia	2	5,88
	None	29	85,29
	Amount	34	100

Based on the distribution of gestational age, the majority of cases occurred at 28–36 weeks of gestation, accounting for 24 cases (70.58%). Meanwhile, 9 cases (26.48%) were recorded at 37–40 weeks, and the fewest occurred at 20–27 weeks, with only 1 case (2.94%). This indicates that most incidents took place during the early to mid-third trimester of pregnancy. In terms of maternal age, the majority of respondents were in the 31–35 years age group, accounting for 15 cases (44.11%), followed by 12 cases (35.29%) in the 26–30 years group. Respondents aged ≥ 36 years were 7 (20.58%), while the youngest age group of 21–25 years included only 1 respondent (2.94%).

Based on parity, most of the mothers were multigravida (24 cases or 70.58%), followed by grandmultigravida (9 cases or 26.47%). There were no primigravida cases recorded.

Regarding history of abortion, among the 12 respondents for whom data were available, 2 women (16.66%) reported a history of abortion, while 10 women (83.34%) did not.

In terms of gestational age at the time of bleeding, the pattern was consistent with obstetric history, with the majority of bleeding occurring at 37–40 weeks (52.94%), and the least during the first trimester (2.94%).

Timing of the bleeding was most commonly in the third trimester, occurring in 30 cases (88.23%), while 4 cases (11.76%) occurred in the second trimester. No bleeding cases were recorded in the first trimester.

Regarding comorbidities, the majority of respondents had no underlying health conditions (29 cases or 85.29%). However, some respondents had comorbidities, including hypertension in 2 cases (5.88%), anemia in 2 cases (5.88%), and diabetes mellitus in 1 case (2.94%).

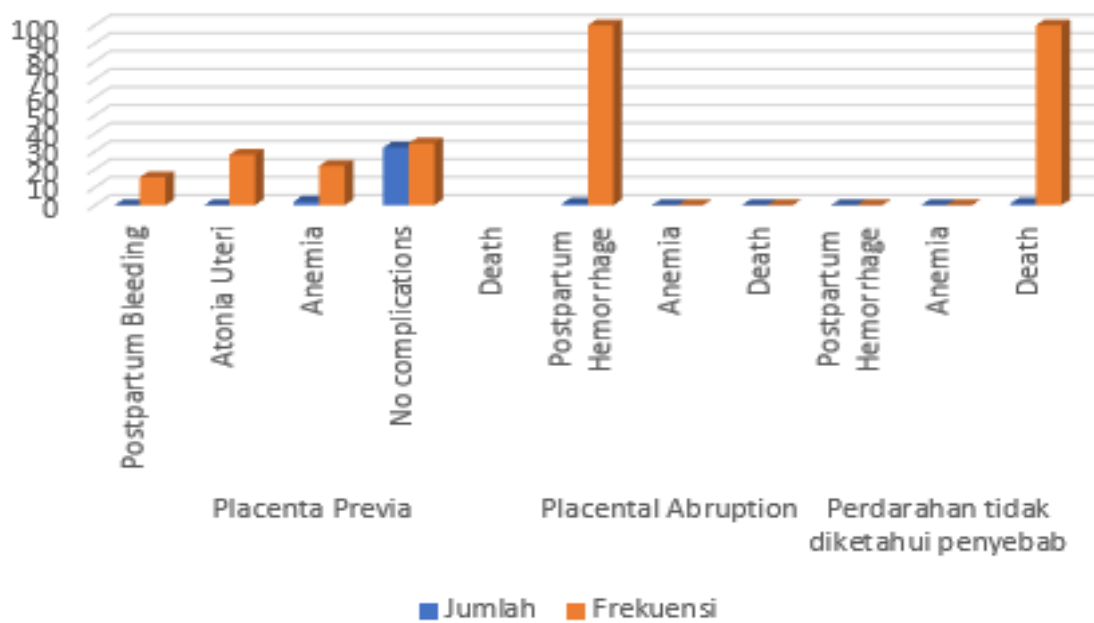


Figure 1. distribution of maternal outcomes based on complications

Among the 32 respondents diagnosed with placenta previa, various complications were recorded. The most common complication was uterine atony, found in 1 cases (28.12%), followed by postpartum hemorrhage in 0 cases (00.00%), and anemia in 5 cases (5.89%). Meanwhile, 11 patients (34.37%) experienced no complications, and no maternal deaths were reported in this group. These findings indicate that although placenta previa often leads to maternal morbidity, prompt and appropriate management effectively prevented fatal outcomes.

In contrast, in the single case of placental abruption, the patient experienced postpartum hemorrhage (100%), but there were no cases of anemia or maternal death. This shows that while placental abruption is a serious obstetric emergency, appropriate intervention can minimize severe maternal outcomes.

In the group with antepartum hemorrhage of unknown cause, no postpartum hemorrhage or anemia was recorded. However, one maternal death (100%) occurred, suggesting that

unidentified or unclassified causes of bleeding may carry a higher risk due to delayed diagnosis or inadequate management. Overall, these results reveal that placenta previa is the most frequent cause of antepartum hemorrhage and the leading contributor to maternal

complications, particularly uterine atony and anemia. Despite these complications, the maternal survival rate remained 100% in placenta previa and placental abruption cases, reflecting effective obstetric care and timely surgical intervention at the RSUD.

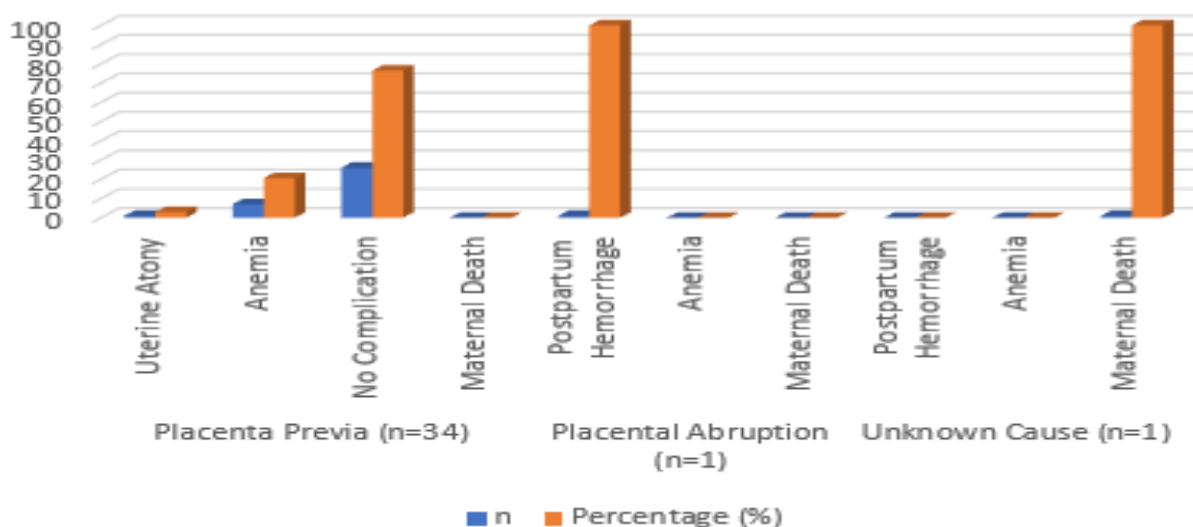


Figure 2. Distribution of maternal outcomes based on maternal age

The distribution of delivery age among respondents with antepartum hemorrhage shows that most cases occurred in mothers diagnosed with placenta previa. The most common maternal complications included uterine atony (2.94%), anemia (20.58%), and no complication (76.47%) with no maternal deaths reported in cases of placenta previa or placental abruption. One maternal death occurred in a case of hemorrhage with an unknown cause. On the perinatal side, complications included low birth weight (75%), asphyxia (28.12%), and neonatal jaundice (15.62%). In contrast, in cases of placental abruption (solutio placenta), one respondent (100%) delivered preterm, and no term deliveries were recorded. This finding is consistent with previous studies that have shown placental abruption often leads to premature termination of pregnancy due to sudden and severe bleeding that endangers both the mother and the fetus.

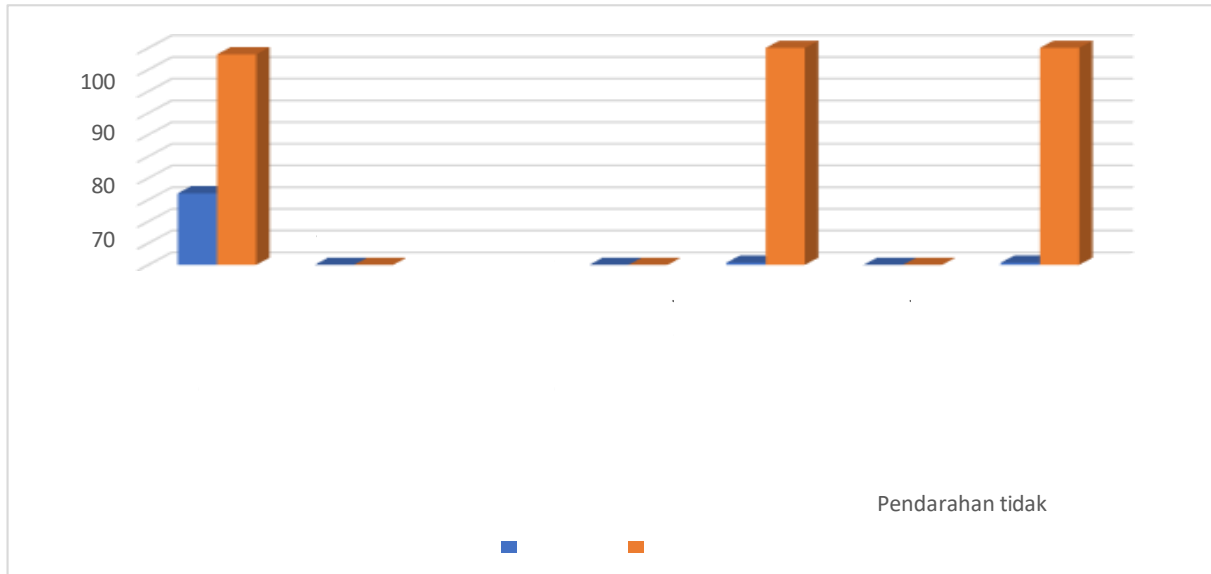


figure 3. Distribution of maternal outcomes based on maternal age

The analysis of delivery methods among mothers with antepartum hemorrhage shows that the majority of cases were associated with placenta previa. Of these, 33 respondents (97.05%) underwent cesarean section, while no spontaneous vaginal deliveries were recorded. This indicates that cesarean section is the preferred and safest mode of delivery for placenta previa, as it helps to control bleeding and reduce the risk of maternal and fetal morbidity and mortality.

In contrast, for the single case of placental abruption (*solutio placentae*), delivery was performed using vacuum or forceps assistance (100%), and no cesarean section was conducted. This suggests that in certain cases where the fetus is already descending and rapid delivery is necessary, assisted vaginal delivery may be performed to minimize maternal blood loss and expedite delivery.

Meanwhile, in the case of antepartum hemorrhage of unknown cause, the respondent also delivered via vacuum/forceps (100%), and no cesarean section was recorded. This shows that the decision regarding the mode of delivery is highly dependent on the clinical condition of the mother, the cause of bleeding, and fetal viability at the time of presentation.

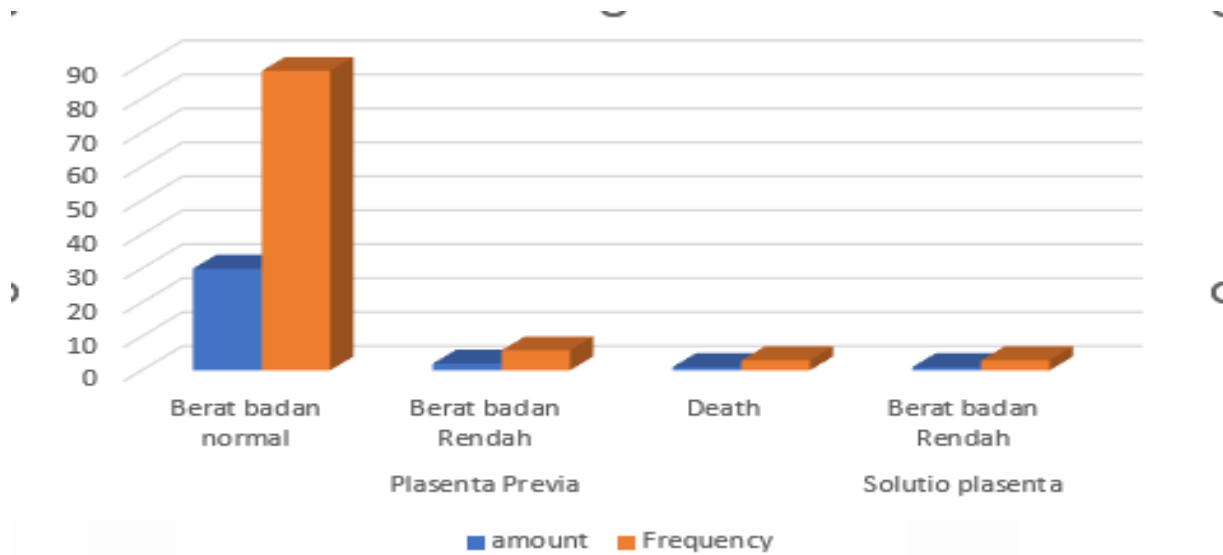


Figure 4. Distribution of perinatal outcomes

The analysis of perinatal complications among infants born to mothers with antepartum hemorrhage shows that the majority of cases were associated with placenta previa. Of these, The bar chart illustrates the distribution of birth weight outcomes in cases of antepartum hemorrhage, specifically placenta previa and placental abruption.

In placenta previa cases, the majority of neonates had normal birth weight, accounting for 31 cases (91.17%). Meanwhile, 2 cases (5.88%) were classified as low birth weight.

In cases of placental abruption (solutio placenta), 1 neonate (2.94%) had low birth weight. Additionally, there was 1 case of fetal death associated with antepartum hemorrhage.

Overall, the chart demonstrates that normal birth weight was predominant in placenta previa cases, while low birth weight and fetal death occurred in smaller proportions, particularly in placental abruption cases. were born without any complications. These findings indicate that placenta previa is closely associated with an increased risk of preterm delivery and perinatal complications, especially low birth weight and asphyxia, though the majority of infants still had favorable outcomes due to timely obstetric intervention.

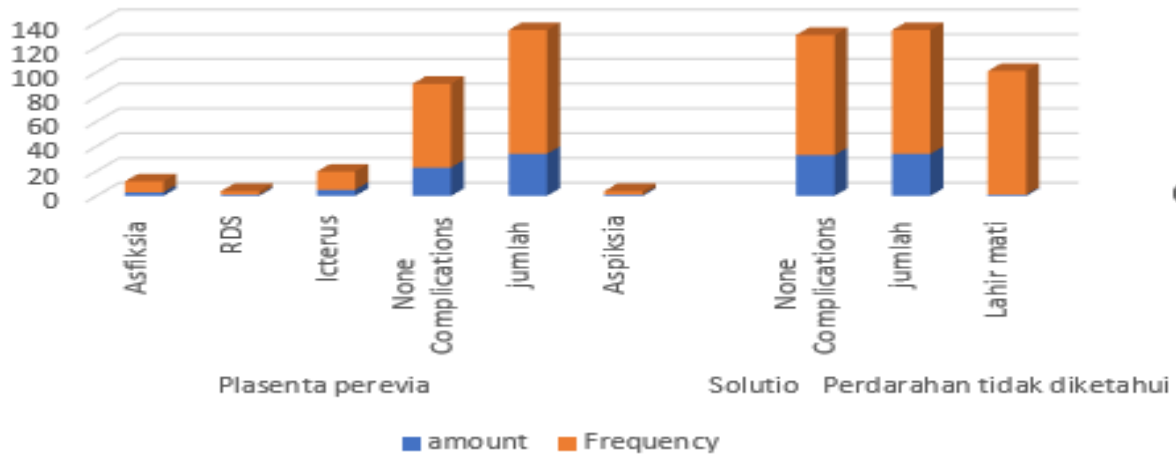


Figure 5. Distribution of perinatal outcomes

Based on the distribution of antepartum hemorrhage (APH) according to perinatal complications, the findings show that in placenta previa cases ($n = 34$), the majority of neonates had no complications, accounting for 23 cases (67.65%). Among those with complications, 5 neonates (14.71%) experienced icterus, 3 neonates (8.82%) experienced asphyxia, and 1 neonate (2.94%) most neonates had no complications, totaling 33 cases (97.06%). Only 1 neonate (2.94%) experienced asphyxia. Meanwhile, in cases of antepartum hemorrhage of unknown cause, there was 1 case (100%) resulting in stillbirth.

These results indicate that most neonates born to mothers with antepartum hemorrhage did not experience perinatal complications. However, certain complications such as icterus, asphyxia, and RDS were observed, particularly in placenta previa cases. In contrast, in cases of placental abruption (solutio placentae), only one infant (3.12%) was recorded with complications, while no cases of neonatal death or severe complications such as RDS or asphyxia were reported. This suggests that rapid and appropriate management can minimize adverse neonatal outcomes in cases of placental abruption. Meanwhile, in cases of antepartum hemorrhage of unknown cause, one infant (100%) was stillborn, indicating that unidentified or unclassified bleeding etiology may carry a higher perinatal risk, particularly when diagnosis or management is delayed.

CONCLUSION

APH is a major contributor in obstetrical hemorrhage. APH cannot reliably be predicted. APH is associated with maternal and perinatal morbidity and mortality. The incidence The morbidity associated with P0st Partum can be reduced by detecting the

condition of placenta in antenatal period by ultrasound and also the correction of anemia during antenatal period.

Placental abruption is a clinical diagnosis and no sensitive or reliable diagnostic tests are available. Intensive family planning programs help in decreasing the cases of APH in relation with age and parity. All women with APH heavier than spotting and women with ongoing bleeding should be recommended hospital stay at least until the bleeding is stopped. Efforts should be made to reduce threat of unnecessary abortion, septic abortions, operative deliveries, because there is greater likelihood of PP in scarred uterus. From present study it can be concluded that APH is still a leading cause of maternal morbidity and mortality in our country. Good regular ANC and availability of medical services remains the backbone for the good maternal and perinatal outcome in APH.

This study found that placenta previa was the leading cause of antepartum hemorrhage, often occurring in the third trimester and commonly affecting multigravida mothers aged 31–35 years. Most cases required cesarean section (97.05%), and over 75% resulted in preterm births. Research (Reddy *et al.*, 2024) The 100 antenatal women with bleeding per vaginam were included in the study. The results showed that majority of APH cases were among multigravida in the age group of 21-25 years. and in the gestational age of 36-38 weeks. Hypertensive disorder of pregnancy was the most common risk factor identified for abruption. LSCS was the most common mode of termination of pregnancy and postpartum hemorrhage (PPH) is the most common complication encountered. There were 3 maternal deaths.

Maternal complications were dominated by uterine atony (28.12%), anemia (21.87%), and postpartum hemorrhage (15.62%), although no maternal deaths occurred in placenta previa or placental abruption cases. In contrast, one maternal death was reported in a case of bleeding with unknown cause. On the perinatal side, complications included low birth weight (75%), asphyxia (28.12%), and neonatal jaundice (15.62%), with the most severe outcome (stillbirth) occurring in the unknown- cause group.

This study was conducted on 34 respondents who experienced antepartum hemorrhage and were treated at a Regional General Hospital (RSUD). The purpose of this study was to determine the distribution of characteristics among pregnant women with antepartum hemorrhage based on age, parity, gestational age, cause of bleeding, type of delivery, and

maternal and perinatal outcomes. The results showed that most respondents were between 26–35 years old (79.4%), consisting of 35.29% aged 26–30 years and 44.11% aged 31–35 years. A smaller proportion were aged ≥ 36 years (20.58%) and only 2.94% were aged 21–25 years. Based on parity, the majority of respondents were multigravida (70.58%), followed by grandmultigravida (26.47%), with no primigravida cases. All respondents had a history of abnormal delivery, and among 12 respondents with previous pregnancies, 16.66% had a history of abortion. (Internal RSUD Research Data, 2024).

Most cases of antepartum hemorrhage occurred in the third trimester (88.23%), followed by the second trimester (11.76%) and the first trimester (2.94%). Based on the etiology, the majority of cases were caused by placenta previa (94.11%), while placental abruption (2.94%) and

unexplained bleeding (2.94%) were less frequent. This finding indicates that placenta previa is the dominant cause of antepartum hemorrhage at the RSUD where this study was conducted. (Prawirohardjo, 2020)

The most common mode of delivery was cesarean section (97.05%), while vacuum extraction or forceps were performed in only 2.94% of cases. No spontaneous vaginal delivery was recorded. All mothers in this study survived without maternal mortality, indicating that medical management of antepartum hemorrhage at RSUD was conducted promptly, effectively, and efficiently to save both mother and fetus. (Ministry of Health of the Republic of Indonesia, 2021).

Of the 33 babies delivered, 97.05% were born alive and 2.94% were stillborn. All infants had a normal birth weight (2,500–4,000 grams). Based on gestational age at delivery, most were post-term (42 weeks) (88.23%), followed by term (37–41 weeks) (8.82%), and preterm (<37 weeks) (2.94%). This suggests that most babies born to mothers with antepartum hemorrhage were in good condition due to proper pregnancy and delivery management. Most mothers (85.29%) had no comorbid conditions, but a small proportion experienced hypertension (5.88%), anemia (5.88%), and diabetes mellitus (2.94%). The majority (97.05%) underwent cesarean delivery. No maternal deaths were found. Some postpartum mothers experienced anemia (5.89%). Perinatal outcomes showed a stillbirth rate of (2.94%), low birth weight (5.88%), asphyxia (8.82%), and neonatal jaundice

(14.70%).

The results of this study are consistent with the findings of Amru et al. (2022) at a tertiary hospital in Surabaya, which reported that placenta previa was the most common cause of antepartum hemorrhage, and that most patients underwent cesarean section to prevent severe complications. The same study also reported no maternal deaths, although the risk of prematurity and low birth weight was higher among infants born to mothers with placenta previa. (Amru, S. N., Yuliati, I., & Setiawan, 2022) Similarly, Hakim (2017) found that antepartum hemorrhage was most frequently experienced by women aged 26–35 years with multiparity, and it was significantly associated with low birth weight (LBW). (Hakim, R. A., Hastuti, S., & Maryani, 2017)

Furthermore, Fan et al. (2017), in a systematic review, found that antepartum hemorrhage commonly occurred among multiparous women and was associated with placenta previa, supporting the epidemiological pattern found in this study. (Fan, D., Wu, S., Liu, L., Xia, Q., Wang, W., Guo, X., & Liu, 2017), (Hamadameen, 2018) also reported that cesarean section was the most frequently performed procedure for antepartum hemorrhage to reduce maternal and fetal mortality, with anemia and uterine atony being the most common complications, which aligns with the findings of this research. Overall, this study confirms that placenta previa is the leading cause of antepartum hemorrhage, particularly among multiparous women aged 26–35 years. Although most deliveries were performed via cesarean section, maternal and neonatal survival rates remained high. These findings reinforce previous research indicating that early detection, active management, and the preparedness of obstetric facilities play a crucial role in reducing maternal and perinatal morbidity and mortality associated with antepartum hemorrhage. (Hamadameen, 2018)

Based on the analysis of this study's data, it can be concluded that placenta previa is the main cause of antepartum hemorrhage, especially in multigravida women aged 31–35 years and in the third trimester of pregnancy. Most cases require cesarean section (97.05%), and more than 75% end in premature birth. The high rates of cesarean delivery and premature birth emphasize the need for medical teams to be prepared to handle these cases. Maternal complications such as uterine atony, anemia, and postpartum hemorrhage are quite common, but there were no maternal deaths in cases of placenta previa or placental

abruption, indicating that proper management can minimize fatal risks to the mother.

From a perinatal perspective, despite complications such as low birth weight, asphyxia, and jaundice, infant safety can still be maintained through intensive monitoring and rapid intervention. Overall, this study confirms that early detection, proper delivery planning, and obstetric facility preparedness are key factors in reducing maternal and perinatal morbidity and mortality due to antepartum hemorrhage.

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