

Review

A Review of Factors Influencing Postpartum Hemorrhage: Age, Parity, Pregnancy Spacing, Anemia, Newborn Weight, Prolonged Labor, Perineal Tear, and Type of Labor

Nana Usnawati* and Astin Nur Hanifah

Department of Midwifery, Poltekkes Kemenkes Surabaya, Surabaya 60282, Indonesia

Article history

Received: 5 October 2024
Revised: 17 November 2024
Accepted: 18 November 2024
Published Online: 24 November 2024

***Correspondence:**

Nana Usnawati
Address: Department of Midwifery,
Poltekkes Kemenkes Surabaya, Surabaya
60282, Indonesia.
Email: nanausnawati@gmail.com

How to cite this article: Usnawati N, Hanifah AN. A Review of Factors Influencing Postpartum Hemorrhage: Age, Parity, Pregnancy Spacing, Anemia, Newborn Weight, Prolonged Labor, Perineal Tear, and Type of Labor. *Health Dynamics*, 2024, 1(11), 415-424. <https://doi.org/10.33846/hd11104>



Copyrights: © 2024 by the authors. This is an open access article under the terms and conditions of the Creative Commons Attribution – NoDerivatives 4.0 International (CC BY-ND 4.0) license (<https://creativecommons.org/licenses/by-nd/4.0/>).

ABSTRACT

Postpartum hemorrhage is one of the most common causes of maternal mortality worldwide. One of the main causes of maternal mortality is bleeding, it is estimated that around 70% of maternal mortality are caused by postpartum hemorrhage. According to data from the Indonesian Ministry of Health in 2022 the number of maternal mortalities in East Java was 499 deaths, the causes of which were found in hypertensive disorders of pregnancy (24.45%) and bleeding (21.24%). The purpose of this systematic literature review is to summarize and examine the literature related to risk factors that affect postpartum hemorrhage. The framework used was PICOC with a population of laboring mothers who experienced postpartum hemorrhage. Systematic literature review using 1 data source, namely google scholar with 169 articles and filtering articles and critical appraisal so that 6 articles were reviewed. The 6 articles showed that age, parity, gestational distance, birth weight, prolonged parturition, perineal tear and type of delivery were associated with the incidence of postpartum hemorrhage. It is recommended to increase education about healthy reproductive age, regulate the number of parity and maintain pregnancy distance, early detection of anemia, administration of 90 FE tablets during pregnancy, early detection of risk factors for postpartum hemorrhage, and delivery planning and prevention of complications.

Keywords: Risk factor; postpartum hemorrhage; maternal mortality

1. INTRODUCTION

Postpartum hemorrhage is bleeding that occurs before, during or after childbirth with a volume of 500 cc in normal delivery and 1000 cc in cesarean section. Early postpartum primary bleeding occurs within 24 hours while secondary bleeding (postpartum bleeding) occurs after 24 hours of delivery.⁽¹⁾ Most cases of maternal death occur within 24 hours of giving birth due to postpartum hemorrhage. The problem in a country, especially in developing countries, is that postpartum hemorrhage is currently still the main cause of maternal death during childbirth. Heavy bleeding leads to hypovolemic shock, inadequate perfusion of vital organs and death if not treated quickly.⁽²⁾

World Health Organization (WHO) data shows that 25.000 of maternal deaths are caused by postpartum hemorrhage and an estimated 100.000 maternal deaths each year. In various countries at least a quarter of all maternal deaths are caused by bleeding, the proportion ranges from less than 10-60%.⁽²⁾ The SDGs target that by 2030 the maternal mortality rate will be 70 per 100,000 live births. The Maternal Mortality Rate (MMR) in East Java in 2022 has decreased compared to the previous two years. In 2020, the maternal mortality in East Java was 98.40 per 100,000 live births, and

in 2021 it was 234.7 per 100,000 live births, while in 2022 it managed to drop to 93.00 per 100,000 live births.⁽³⁾

The impact caused in addition to death to the mother due to postpartum hemorrhage according to Amelia and Cholifah at the time of childbirth is causing uterine atonia, placental retention, uterine rupture, uterine inversion, birth canal trauma and blood clotting system disorders until death, while in the postpartum period, it is an infection in the uterus (endometritis).⁽⁴⁾ Risk factors for postpartum hemorrhage according to Anggraini et al. are age, parity and pregnancy distance.⁽⁵⁾ According to Dewi et al. the Prolonged labour is also a risk factor for postpartum bleeding.⁽⁶⁾ Another risk factor according to Fitri et al. one of the main causes is anemia in childbirth.⁽⁷⁾ Meanwhile, according to Dewi et al. the risk factors for postpartum hemorrhage are the type of delivery, perineal tear, and the weight of the baby born.⁽⁸⁾

Prevention and handling steps from before pregnancy and during pregnancy by routinely conducting pregnancy examinations as an effort to handle and prevent early if several factors are found that cause postpartum bleeding.⁽⁹⁾ The antenatal care (ANC) program is integrated with screening for anemia and chronic energy deficiency in pregnant women, laboratory examinations, and the administration of Fe supplementation to prevent iron deficiency anemia in adolescents, especially in pregnant women.⁽¹⁰⁾ Screening to fill out the KSPR (Kartu Skor. Poedji Rochjati) Scorecard, early detection of bleeding screening and pre-eclampsia screening with Body Mass Index (BMI), Mean Arterial Pressure (MAP) examination as an effort to prevent complications of pregnancy, childbirth and postpartum.⁽¹¹⁾ The handling of bleeding cases during childbirth includes the installation of infusions to replace lost fluids, the administration of oxygen, the administration of drugs to stimulate the onset of contractions, the action of internal and external bimanual compression in cases of bleeding caused by uterine atonia, if the bleeding is due to a tear in the birth canal, sutures will be made on the birth canal tear, so that from some of the treatments carried out can stop the bleeding in childbirth.⁽¹²⁾

The objective of the review is to summarize and examine the literature related to risk factors that affect postpartum hemorrhage. This review is important because postpartum hemorrhage is the main cause of maternal morbidity and mortality. Understanding risk factors can help healthcare professionals design more

effective prevention, early detection, and intervention strategies to reduce the risk of complications. The novelty of this study is that it provides a comprehensive analysis that can be a reference in maternal and child health policies as well as clinical guidelines for the prevention of postpartum hemorrhage.

2. METHODS

Before conducting the systematic review, we first formulated a question using PICOC. P (Patient, Population, Problem) = maternity with postpartum hemorrhage, I (Intervention) = No intervention given, C (Comparison) = No comparator, O (Outcome) = factors affecting postpartum hemorrhage. Content = all countries. After formulating a research statement to guide the literature search, the question we compiled was: What are the risk factors that affect postpartum hemorrhage?

2.1 Sourcing Data and Extraction

After developing the research question, the next stage was to select the most relevant article search terms and databases to answer the research question. At the beginning of the search, the reviewer deliberately searched extensively to retrieve as many articles as possible in order to get relevant ones. Furthermore, the reviewer specialized in searching for research journals published through electronic databases, such as Google Scholar, using keywords and selecting literature search documents. The search string used was: "postpartum hemorrhage" AND (factor OR determinant) AND Indonesia. The search results yielded 1,360 articles according to the keywords.

2.2 Article Selection

The next stage was for the reviewers to select articles based on the inclusion criteria specifications. The inclusion criteria were articles published in the 2023-2024 time range, quantitative research, original articles, articles available in full text, and articles discussing risk factors that affect postpartum hemorrhage. After adjusting to the keywords, duplicate articles were removed (Figure 1). The inclusion criteria were applied, and titles and abstracts were screened. As a result, 6 articles that answered the research question were identified as worthy of analysis. The author presented these articles in the form of Table 1.

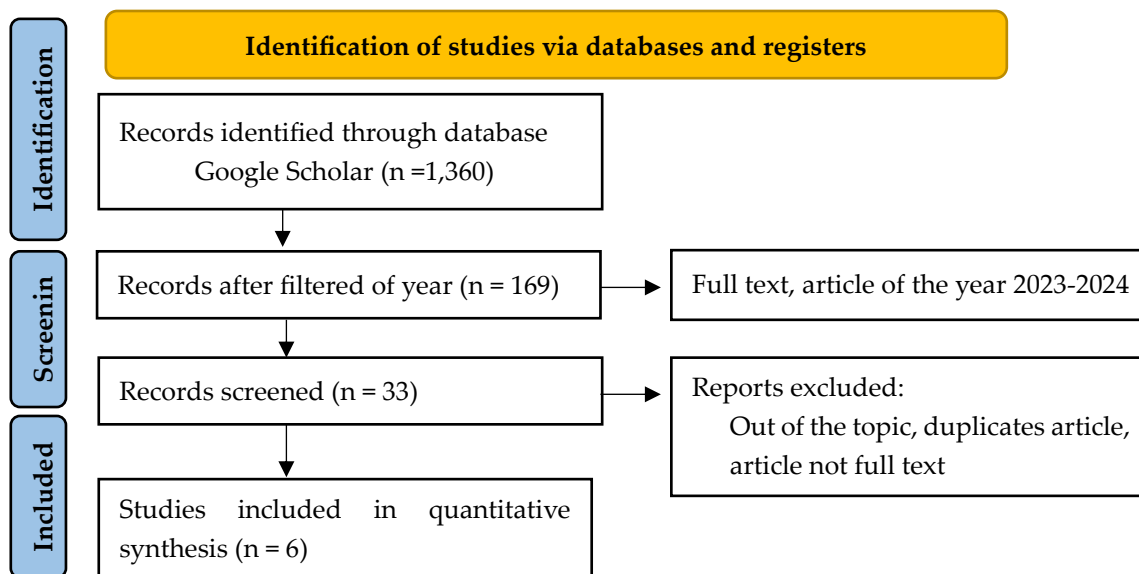


Figure 1. Flowchart of article selection

3. RESULTS

The findings were obtained from articles published in 2023-2024. 6 selected articles using cross-sectional

design. The article obtained came from Indonesia. All articles discuss the risk factors that affect postpartum bleeding.

Table 1. Data extraction

Author	Title	Method	Sample	Result
Zuiatna et al. (2024) ⁽¹³⁾	Analysis of Factors Related to Post Partum Bleeding to the Inpartum	Cross sectional	The sample used total sampling where all population were sampled with a total of 54 people	Risk factors that affect postpartum bleeding are: age, parity, birth distance
Fitri et al. (2023) ⁽⁷⁾	The Relationship between Anemia in Pregnancy and the Incidence of Postpartum Bleeding at dr Sobirin Hospital in 2023	Cross sectional	The sample of 72 included 40 with anemia and 23 with postpartum hemorrhage	Risk factor that affects postpartum bleeding is anemia
Turiyani (2023) ⁽¹⁾	The Relationship between Pregnancy Distance and Infant Birth Weight with the Incidence of Haemorrhagic Post Partum at the Prabumulih City Regional General Hospital	Cross sectional	Random sampling technique to determine the number of samples so that 326 mothers were obtained	Risk factor that affects postpartum bleeding is anemia are: birth distance and baby's birth weight
Dewi et al. (2023) ⁽⁶⁾	Factors Related to Anemia in Pregnant Women with the Incidence of Postartum Bleeding at Pena 98 Hospital Gunung Sindur Bogor in 2023	Cross sectional	A sample of 31 mothers with postpartum hemorrhage at Pena 98 Hospital in 2023	Risk factor that affects postpartum bleeding is anemia are: age, parity, prolonged labour.
Ujianti et.al. (2023) ⁽¹⁴⁾	The Relationship of Perineal Rupture with Post Partum Hemorrhage at Dewi Sartika General Hospital Kendari City	Cross sectional	90 maternity mothers who had postpartum hemorrhage	Risk factor that affects postpartum bleeding is anemia is: perineal tear
Dewi et.al. (2023) ⁽⁸⁾	Analysis of Risk Factors Postpartum Hemorrhage Among Mothers In The Delivery Room of RSUD dr. Zainoel Abidin Banda Aceh in 2023	Cross sectional	The sample was 138 mothers giving birth	Risk factors are: age parity birth distance types of delivery perineal tear baby's birth weight

Table 1 summarizes the findings from several studies regarding the risk factors for postpartum hemorrhage. The studies identified various factors, such as age, parity, and birth distance, which were highlighted as significant risk factors in different populations. For instance, Zuiatna et al. noted that age, parity, and birth distance were linked to postpartum bleeding, while Fitri et al. specifically identified anemia as a significant risk factor. Other studies, like that of Farida et al., confirmed the relationship between multiple factors such as age, parity, birth distance, and perineal tear, emphasizing the diverse influences on postpartum hemorrhage.

Table 2 presents the demographic and clinical characteristics of the respondents in the studies reviewed. It provides insights into the populations examined, such as age, parity, birth distance, and other factors that could influence postpartum hemorrhage. The data reveals that certain age groups, such as those under 20 and over 35 years, were more prevalent in some studies, while others found that the parity distribution included both primiparous and multiparous women. Additionally, the birth distance and perineal tear characteristics varied across studies, highlighting the differences in risk profiles and the populations studied.

Table 2. Characteristics respondents

Author name (year)	Characteristics respondents
Zuiatna et al. (2024) ⁽¹³⁾	The sample was 54 people, dominated by the age group of <20 and >35 years, parity was dominated by primipara and grandemultipara, birth distance was dominated by <2 years of birth distance
Fitri et al. (2023) ⁽⁷⁾	The sample amounted to 72 people, dominated by mothers who experienced anemia
Turiyani (2023) ⁽¹⁾	The sample amounted to 326 people, the birth distance was dominated by low-risk birth distance, the birth weight of babies was dominated by the weight of low-risk babies
Dewi et al. (2023) ⁽⁶⁾	The sample was 31 people, the age was dominated by <20 years and >35 years (high risk), parity was dominated by primipara and multi para (low risk), the Prolonged labour was more dominant, the birth distance was dominated by > 2 years (no risk)
Ujianti et.al. (2023) ⁽¹⁴⁾	The sample amounted to 90 people, dominated by mothers who gave birth with perineal tears
Dewi et.al. (2023) ⁽⁸⁾	The sample was 138 people, age was dominated by 20-35 years, parity was dominated by primipara, pregnancy distance was dominated by no risk, type of delivery was dominated by normal delivery, perineal tear was dominated by no tear, and baby's birth weight was dominated by normal.

Table 3 offers a summary of the factors identified across the reviewed articles as contributing to postpartum hemorrhage. Age, parity, and pregnancy distance were consistently found to be significant factors affecting postpartum bleeding, as noted in multiple studies (Zuiatna et al., 2024; Dewi et al., 2023;

Farida et al., 2023). Additionally, anemia, baby's birth weight, prolonged labor, and perineal tears were also identified as key contributors to postpartum hemorrhage in various studies. This table highlights the wide range of factors that influence postpartum bleeding, underlining the complexity of the condition.

Table 3. Summary of results of factors that affect postpartum bleeding from the selected articles

No.	Factors	Reference
1	Age	Zuiatna et al. (2024) ⁽¹³⁾ ; Dewi et al. (2023) ⁽⁶⁾ ; Dewi et al. (2023) ⁽⁸⁾
2	Parity	Zuiatna et al. (2024) ⁽¹³⁾ ; Dewi et al. (2023) ⁽⁸⁾
3	Pregnancy Distance	Zuiatna et al. (2024) ⁽¹³⁾ ; Dewi et al. (2023) ⁽⁶⁾ ; Dewi et al. (2023) ⁽⁸⁾
4	Anemia	Fitri et al. (2023) ⁽⁷⁾
5	Baby's birth weight	Turiyani (2023) ⁽¹⁾ ; Dewi et al. (2023) ⁽⁸⁾
6	Prolonged labour	Dewi et al. (2023) ⁽⁶⁾
7	Perineal tear	Ujianti et al. (2023) ⁽¹⁴⁾ ; Dewi et.al. (2023) ⁽⁸⁾
8	Types of delivery	Dewi et.al. (2023) ⁽⁸⁾

4. DISCUSSION

4.1 Age

Pregnant women who are <20 years old and >35 years are more at risk of postpartum bleeding. Pregnant women under the age of 20 years are more at risk because the mother's uterus and pelvis are not ready to reproduce properly, so it is necessary to be aware of the possibility of having a difficult delivery and pregnancy that can result in birth complications. On the other hand, if the pregnancy occurs at the age of more than 35 years, less prepared for pregnancy and childbirth tends to experience bleeding, hypertension, obesity, diabetes, uterine myoma, long labor. The safe age to get pregnant and give birth is between 20-35 years old. Lifespan is the length of life or since birth. Age greatly determines a mother's health, mothers are said to be at high risk if pregnant women are under 20 years old and over 35 years old. Age is useful for anticipating the diagnosis of health problems and the actions taken.

According to the results of Zuiatna et al. shows that the Chi-Square test is obtained $p=0.004$ which means that age becomes related to the incidence of postpartum hemorrhage. The majority occurred at the age of <20 and >35 years, as many as 37 respondents in primary bleeding, 21 respondents in secondary bleeding, 16 respondents, and in the minority, occurred in 20-35 years, as many as 17 respondents, in primary bleeding, 9 respondents, in secondary bleeding, 8 respondents.⁽¹³⁾

According to Dewi et al. that mothers who experience anemia at the age of <20 and >35 years can be concluded that there is a significant relationship with the incidence of postpartum bleeding with an Odds Ratio (OR) value of 11,250 so that it can be interpreted that there is an 11 times greater chance of experiencing postpartum bleeding than mothers aged 20-35 years. The study is in accordance with research according to Dewi, 2023 that the high-risk age who experience postpartum hemorrhage is higher, which is 84.62% compared to 15.38% of respondents who are not at high risk of experiencing postpartum hemorrhage. The results of the statistical test showed that high-risk age respondents had an 11-fold risk of experiencing postpartum hemorrhage compared to non-high-risk respondents with $p=0.000$, meaning that there was a significant relationship between age and the incidence of postpartum hemorrhage.⁽⁸⁾

Maternal age ≥ 35 was identified to increase the risk of postpartum hemorrhage by 0.96 times. Advanced maternal age leads to a higher risk of PPH which can be caused by the decrease in elasticity of the soft birth canal and worsening of uterine contraction with the increase of maternal age. Also, a higher risk of placenta previa and placental abruption occur with advanced maternal age, which increase the possibility of postpartum hemorrhage.⁽¹⁵⁾

4.2 Parity

High parity is one of the risk factors for postpartum hemorrhage. This is because the condition of the myometrium and muscle tone is no longer good, causing failure of compression of blood vessels at the placenta implantation site, resulting in postpartum hemorrhage. Parity 2-4 is the safest parity reviewed from the perspective of maternal death. Parity 1 and high parity (more than 4) had higher maternal mortality rates. At low parity (parity 1) can cause maternal unpreparedness in dealing with childbirth so that pregnant women are unable to handle complications that occur during pregnancy, childbirth and postpartum.

Postpartum mothers with primipara parity and grandemultipara who are at risk for childbirth. The risk for mothers with primipara parity is because mothers will usually experience postpartum depression caused by anxiety when going to give birth and the mother's unpreparedness in facing childbirth. The risk in mothers with grandemultipara parity is due to the weakening uterus and less able uterine muscles to contract and mothers who have many children usually feel that they do not need to check their pregnancy because the mother already feels experienced in her pregnancy.

According to the research results of Zuiatna et al. the majority occurred in primipara parity and grandemultipara as many as 34 respondents, in primary bleeding occurred as many as 19 respondents, in secondary bleeding occurred as many as 15 respondents, and minority occurred in multipara parity as many as 20 respondents, in primary bleeding occurred as many as 11 respondents, in secondary bleeding occurred as many as 9 respondents, with a Chi-Square test value of $p=0.001$ which can be interpreted that there is a parity relationship with incidence of postpartum hemorrhage.⁽¹³⁾ This is in accordance with research according to Dewi et al. that pregnant women

with anemia in the low-risk parity category are associated with postpartum bleeding.⁽⁶⁾ Meanwhile, according to Dewi et al. research, the grandemultipara parity level has a 7.72 times risk of experiencing postpartum hemorrhage compared to multipara and primipara parity.⁽⁸⁾

Primiparity is a risk factor for postpartum bleeding due to a lack of information obtained by the mother, causing unpreparedness to face possible complications in pregnancy and childbirth. More deliveries have also been shown to contribute to the incidence of postpartum hemorrhage due to weakening uterine contractions, causing thinning of the uterine wall.⁽¹⁶⁾

4.3 Pregnancy Distance

Women who give birth with a distance of less than 2 years will experience an increased risk of postpartum bleeding and even death during childbirth. Women after giving birth need 2 to 3 years to recover their bodies and prepare for pregnancy and subsequent delivery. If the pregnancy distance is too close, it tends to cause damage to the female reproductive system both physiologically and pathologically, the delivery distance that is too close causes the mother to have a short time to recover the condition of her uterus so that it can return to its previous condition.

According to the research of Zuiatna et al., of the 54 respondents, the majority occurred at birth distance <2, as many as 47 respondents occurred at primary bleeding, 26 respondents occurred at secondary bleeding, 21 respondents occurred and minority occurred at birth spacing ≥ 2 years, 7 respondents occurred at primary bleeding, 4 respondents occurred at secondary bleeding, 7 respondents with the Chi-Square test obtained $p=0.002$, which means that there is a relationship between birth distance and postpartum hemorrhage. At the birth distance partial bersars occur in postpartum bleeding usually occurs within 6 hours postpartum, primary bleeding monitoring is maximum, then secondary bleeding will not occur, therefore the incidence of secondary bleeding is less than primary bleeding.⁽¹³⁾

This is in accordance with research according to Turiyani, (2023) that out of 326 mothers, there were 87 mothers with a high risk gestation distance and diagnosed with postpartum hemorrhage as many as 76 respondents (23.3%), 11 respondents (3.4%) did not have postpartum hemorrhage, and of 239 mothers with

low-risk pregnancy distance, 46 respondents (14.1%) were diagnosed with postpartum hemorrhage and 193 respondents (59.2%) were not diagnosed with postpartum hemorrhage with the Chi-Square $p=0.000$ test, which means that there is a close relationship It means that the distance between pregnancy and postpartum hemorrhage.⁽¹⁾

According to Dewi et al., there is a significant relationship between pregnancy distance and the incidence of postpartum bleeding with the results of statistical tests showing that respondents with high-risk pregnancy spacing have 3.2 times more likely to experience bleeding compared to mothers who are not at high risk with a value of $p=0.001$.⁽⁸⁾ Meanwhile, according to Dewi et al. that pregnancy spacing does not have a significant relationship with the incidence of postpartum hemorrhage. Although there was no significant relationship between the variable of birth distance and postpartum hemorrhage, the frequency of maternal pregnancy spacing in the 2-year > group was 18 people (58.1%). This indicates an increase in the incidence of postpartum bleeding along with an increase in risky birth spacing.⁽⁶⁾

Furthermore, the obstetrical status of the mother, as seen from the distance between the current pregnancy and previous pregnancies, shows that postpartum hemorrhage is more common in women giving birth with a gestational age of 2 to 4 years. Other studies have revealed that apart from short intervals or <2 years, women with long birth intervals or > four years have a greater risk of experiencing postpartum hemorrhage. Once again, the results of this study strengthen the theory that postpartum hemorrhage can occur to anyone, even without previous risk factors.⁽¹⁶⁾

4.4 Anemia

In pregnant women, anemia is said if the hemoglobin (Hb) level < 11 g/dl. Lack of hb levels in the blood results in a lack of oxygen carried to the body cells as well as brain and uterine cells. The amount of oxygen in the blood is insufficient to cause the muscles in the uterus to not contract adequately so that uterine atonia arises which results in heavy bleeding. Anemia is a risk factor for postpartum events.

According to the results of Fitri et al. that the relationship between anemia and postpartum bleeding was obtained that as many as 19 people (47.5) mothers who were anemic during pregnancy experienced postpartum bleeding. Meanwhile, among mothers who

did not experience anemia, there were 4 people (12.5) who experienced postpartum hemorrhage. The results of the statistical test obtained $p\text{-value}=0.004$ which can be concluded that there is a significant relationship between the incidence of anemia during pregnancy and the incidence of postpartum hemorrhage. From the analysis, the value of $OR = 6.333$ was obtained, which means that mothers who experience anemia during pregnancy have a 6.33 times chance of experiencing postpartum hemorrhage.⁽⁷⁾

The results of this study also showed that pregnant women who did not experience postpartum bleeding were more likely to have normal hemoglobin levels or were not anemia in the third trimester of pregnancy compared to pregnant women who had low hemoglobin levels or anemia in the third trimester of pregnancy. Low hemoglobin levels cause low oxygen perfusion to tissues, while the need for tissue perfusion increases due to the delivery process so that the body will continue to compensate until bleeding in the mother who gives birth.⁽⁷⁾

4.5 Birth Weight of Baby

An abnormal or too large birth weight of the baby is a risk of postpartum bleeding because the uterus is overstretched and results in weak contractions and postpartum bleeding can occur. This condition has the effect of an overdistended uterus making uterine atonia postpartum. The weight of babies born is divided into two categories: High risk (If the baby weighs < 2500 grams or > 4000 grams) and Low risk (If the baby weighs 2500-4000 grams).

According to Turiyani's research, out of 326 mothers, there were 67 mothers with high-risk birth weight and diagnosed with postpartum hemorrhage, as many as 52 respondents (16%) and 15 mothers (4.6%) who did not experience postpartum hemorrhage. The Chi-Square test $p=0.000$ which means that there is a meaningful relationship between the baby's birth weight and the incidence of postpartum hemorrhage. Because of the large size of the fetus, it stretches the uterus from pregnancy to the partus. This makes the fatigue of the myometrium and the disruption of uterine contractions after childbirth and in the normal partus.⁽¹⁾

This is in accordance with research according to Dewi et al. that there is a significant relationship between birth weight and the incidence of postpartum hemorrhage. The results of the Chi-Square test were

obtained $p=0.000$ and showed that mothers with large birth weight had a 23.5 times risk of bleeding compared to normal birth weight.⁽⁸⁾

In the present study, the data showed that neonatal weight >4 kg could increase the risk of PPH in pregnant women by 2.92 times and was an independent risk factor for PPH. Neonatal weight >4 kg, namely macrosomia, was identified as being associated with the risk of PPH in previous studies. With the development of the social economy, the living standards of people are generally improved, and pregnant women pay more attention to nutrition and supplementation during pregnancy. Improper nutrition and lack of enough physical exercise make not only pregnant women themselves gain excessive weight, but also increase the risk of macrosomia in the fetus. During vaginal delivery, macrosomia may prolong the first and second stages of labor and result in severe perineal laceration or even perineal incision. When the laboring trial period is too long, obstetricians often choose cesarean section to avoid neonatal asphyxia.⁽¹⁵⁾

4.6 Prolonged Labour

The prolonged labour is a labor that lasts more than 18 hours. Mothers with long labor have weak contractions and are one of the triggers for bleeding which states that the cause of postpartum bleeding is long labor. In primipara partus lama occurs if it is more than 12 hours while in multipara it occurs if it is more than 8 hours.

According to Dewi et al. there is a relationship between the Prolonged labour and the incidence of postpartum hemorrhage. The results of the Chi-Square test were obtained which is $p=0.007$ with an OR value of 0.066 so that it can be stated that mothers who experience Prolonged labour have a 0.6 times greater chance of experiencing postpartum hemorrhage than mothers who do not experience prolonged labour. The Prolonged labour causes fatigue in the uterus, thus causing a decrease in tone when giving birth to the placenta. Then after the uterus cannot contract properly, primary postpartum hemorrhage will occur.⁽⁶⁾

This might be explained by the possibility that the pronged labor raises the danger of laceration to the pelvic blood vessels and soft tissue. This significantly lessens uterine contraction. As a result, there may be a significant increase in the likelihood of blood loss following delivery. This study discovered that antepartum hemorrhage in the current pregnancy was

one of the major contributors to primary postpartum hemorrhage. Cervical or vaginal laceration and antepartum hemorrhage in a recent pregnancy were risk factors for the primary PPH.⁽¹⁷⁾

This study showed that women who had experienced prolonged labor (≥ 24 h duration of labor) were 3.4 times more likely to develop PPH when compared with those who had less than 24 h duration of labor. Moreover, as our findings supported by different literatures, when the duration of labor increases, the risk of developing PPH also increased. The possible explanation for this could be that the prolonged labor might increase the risk for a laceration to the blood vessels and soft tissue in the pelvis. This reduces uterine contraction by a significant level. As a result, the chance of losing blood after delivery could be increased by a substantial amount.⁽¹⁸⁾

4.7 Perineal Tear

Birth canal tears are one of the most frequent causes of postpartum bleeding. A tear in the birth canal can provide a varying amount of bleeding. Bleeding originating from the birth canal is always evaluated, namely the source, and amount of bleeding so that it can be treated. Birth canal trauma needs special attention, because it can cause bleeding that results in maternal death.

According to Ujianti et al. that there is a relationship between perineal tears and postpartum hemorrhage. Of the 115 incidents of postpartum hemorrhage that were in the primary category of perineal rupture, 77 people (67.0%), and 38 people (33.0%) were in the secondary category. Meanwhile, of the 57 postpartum hemorrhages that were in the category of non-rupture perineal in the primary category, 23 people (40.4%) and 34 people (59.6%) were in the secondary category. Paying attention to the health needs of mothers in childbirth, one of them is to provide maternal health education about work and childbirth at the health office because it is to reduce the frequency of attachment during work with perineal tears.⁽¹⁴⁾

This is in accordance with the research of Dewi et al., according to mothers, with perineal tears having the potential to experience postpartum bleeding. The results of the OR showed that respondents with birth canal injuries had a 2.2 times risk of bleeding compared to mothers who did not experience perineal tears. Birth canal tears always provide varying amounts of

bleeding. Sources of bleeding can come from the perineum, vagina, cervix, and uterine tears.⁽⁶⁾

4.8 Types of Delivery

In cesarean delivery, the amount of bleeding is twice as much as in vaginal delivery. There was an increased risk of up to 42 times compared to patients who gave birth vaginally. In childbirth, it is said to experience postpartum bleeding if in normal childbirth the bleeding is >500 ml, while in cesarean section delivery, it is bleeding as much as >1000 ml.

According to the results of Dewi et al., the proportion of mothers based on the type of cesarean section delivery experienced postpartum bleeding was higher, which was 79.49% compared to mothers who gave birth normally who experienced bleeding of 20.51%. According to the Chi-Square test, $p=0.000$ was obtained, which means that there is a significant relationship between the type of delivery and the incidence of postpartum hemorrhage. Efforts that can be made to reduce the incidence of postpartum bleeding in mothers are to conduct strict monitoring of pregnancy, childbirth and postpartum.⁽⁸⁾

This study also revealed that delivery by cesarean section increased the probability of developing PPH by nearly six folds. Similarly, those women who gave birth by instrumental vaginal delivery were four times more likely to develop PPH when compared with those who gave birth by spontaneous vaginal delivery. This finding was in agreement with the previous results.⁽¹⁸⁾

Cesarean section is a common choice for obstetricians when they face emergencies such as dystocia. However, the risk of a severe complication such as bleeding, thromboembolism, and infection is much higher in women delivering by cesarean section than by vaginal birth. Previous studies have revealed that compared with vaginal delivery, cesarean section has a significantly higher risk of PPH, which supports the conclusion of our study. Cesarean section, as an invasive operation, can cause mechanical injury to the body and can cause irritable coagulation disorders. The timing of the cesarean section operation is an important factor affecting the volume of bleeding. Indicated that women receiving cesarean sections during delivery often had a higher risk of PPH, compared with women having prenatal cesarean sections. This may be because cesarean sections are often the choice after vaginal delivery failure due to various reasons, such as fetal asphyxia. A long stage of labor results in edema of

uterine myofiber, brittleness and thinning of the lower segment of the uterus, and poor uterine contraction, which increase blood loss. In addition, cesarean section can prolong the operation time of parturient women, increasing the volume of blood loss.⁽¹⁵⁾

5. CONCLUSION

Based on the literature review of risk factors for postpartum hemorrhage, it shows that from 6 articles there are 8 risk factors that have a significant influence on the incidence of postpartum hemorrhage, namely age, parity, pregnancy distance, anemia, weight of the newborn, prolonged labour, perineal tear and type of delivery. Therefore, it is recommended to increase education about healthy reproductive age, regulate the number of parity and maintain pregnancy distance, early detection of anemia, administration of 90 FE tablets during pregnancy, early detection of risk factors for postpartum hemorrhage, and delivery planning and prevention of complications.

Acknowledgement

The authors are very grateful to the Director of Poltekkes Kemenkes Surabaya for the opportunity to conduct this review.

Funding Information

No funds were received for this study.

Conflict of Interest

The authors declare no conflict of interest.

REFERENCES

1. Turiyani T. Hubungan Jarak Kehamilan dan Berat Lahir Bayi dengan Kejadian Haemorrhagic Post Partum di Rumah Sakit Umum Daerah Kota Prabumulih. *Jurnal Bidang Ilmu Kesehatan*. 2023;13(1):79–87. <http://dx.doi.org/10.52643/jbik.v13i1.2982>
2. Ambarika R, Yalastyarini EA. Analisis Faktor-Faktor yang Mempengaruhi Terjadinya Kegawatdaruratan Hemorrhagic Post Partum (HPP). *Journal for Quality Women's Health*. 2021;4(2):198–201. <https://doi.org/10.30994/jqwh.v4i2.137>
3. Kemenkes RI. Profil Kesehatan Indonesia [Internet]. Kementerian Kesehatan Republik Indonesia. 2022. Available from: <https://www.kemkes.go.id/downloads/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-2021.pdf>
4. Amelia P, Cholifah. Konsep Dasar Persalinan. Sidoarjo: Universitas Muhammadiyah; 2019. <https://doi.org/10.21070/2019/978-602-5914-75-1>
5. Anggraini ND, Fuziah NA, Kristianingsih A, Sanjaya R. Faktor Yang Berhubungan dengan Kejadian Perdarahan Post Partum pada Ibu Bersalin. *Wellness and Healthy Magazine*. 2020;2(2):259–68.
6. Dewi I, Jubaedah A, Kusmawati D. Faktor-Faktor yang Berhubungan dengan Anemia pada Ibu Hamil dengan Kejadian Perdarahan Postpartum di Rumah Sakit Pena 98 Gunung Sindur Bogor Tahun 2023. *Jurnal Ilmiah Bidan*. 2024;7(2). <http://dx.doi.org/10.69935/jidan.v7i2.54>
7. Fitri SK, Situmorang RB, Rustandi H. Hubungan Anemia dalam Kehamilan dengan Kejadian Perdarahan Postpartum di Rumah Sakit dr Sobirin Tahun 2023. *Kemaskia Jurnal Kesehatan Masyarakat, kebidanan, Kesehatan Ibu dan Anak*. 2023;1(2):107–111.
8. Dewi F, Jannah M, Laila N, Maifrizal. Analysis of Risk Factors Postpartum Hemorrhage Among Mothers in the Delivery Room of RSUD Dr. Zainoel Abidin Banda Aceh In 2023. *Proceedings of the 1st International Conference on Education, Science Technology And Health (ICONESTH 2023)*. Banda Aceh. Universitas Bina Bangsa Getsempena, Dec 12-14, 2023. p. 1421-32
9. Kumalasari R, Widiastuti F. Risiko Atonia Uteri terhadap Perdarahan Post Partum pada Ibu Bersalin. *Jurnal Bidan Prada*. 2022;13(1):1–11.
10. Kurniasih E, Komalawati R. Skrining Anemia dan Pemberian Suplementasi Fe pada Ibu Hamil dan Wanita Usia Subur (WUS) sebagai Upaya Pencegahan Anemia Kehamilan. *Jurnal Pengabdian kepada Masyarakat Wahana Usada*. 2020;2(1):1–6. <http://dx.doi.org/10.47859/wuj.v2i1.127>
11. Susanti E, Zainiyah Z, Hasanah F, Dewi AW, Sakdiyah H. Kartu Skor Puji Rochyati (KSPR) dalam Upaya Screening Kehamilan Ibu Resiko Tinggi. *Jurlan Paradigma*. 2020;2(2):1–9.
12. Kristianingsih A, Mukhlis H, Ermawati E. Faktor-faktor yang Berhubungan dengan Kejadian Perdarahan Postpartum di RSUD Pringsewu. *Wellness and Healthy Magazine*. 2019;1(2):139–49.
13. Zuiatna D, Suyanti S. Analisis Faktor Yang Berhubungan Dengan Perdarahan Post Partum Pada Ibu Bersalin. *Jurnal Kebidanan Sorong*. 2024;3(2):1–12. <https://doi.org/10.36741/jks.v3i2.215>
14. Ujianti T, Jingsung J, Zakiah V. The Relationship of Perineal Rupture with Post Partum Hemorrhage at Dewi Sartika General Hospital Kendari City. *Jurnal Pelita Sains Kesehatan*. 2023;3(6):30–36.
15. Pibu ZM, Bianba ZM, Yang G, CyRen LM, Pubu DJ, Suo Lang KZ, et al. Factors Affecting the Risk of Postpartum Hemorrhage in Pregnant Women in Tibet Health Facilities. *Medical Science Monitor*. 2021;27. <http://dx.doi.org/10.12659/msm.928568>
16. Tauho KD, Tampubolon R, Mone DM. Profile of Women Suffering Postpartum Hemorrhage: Recent Update In Salatiga Region General Hospital, Central Java, Indonesia. *International Journal of Nursing and Health Services (IJNHS)*. 2023;6(4):266–72. <http://dx.doi.org/10.35654/ijnhs.v6i4.739>

17. Zenebe GA, Zenebe WA, Ewunie TM, Dires S. Primary postpartum hemorrhage and associated factors among delivering women in Gedeo Zone, Southern Ethiopia. *Frontiers in Medicine*. 2023;10. <http://dx.doi.org/10.3389/fmed.2023.1096501>
18. Amanuel T, Dache A, Dona A. Postpartum Hemorrhage

and its Associated Factors Among Women who Gave Birth at Yirgalem General Hospital, Sidama Regional State, Ethiopia. *Health Services Research and Managerial Epidemiology*. 2021;8:1-7. <http://dx.doi.org/10.1177/233339282111062777>