

RISK FACTORS OF POSTPARTUM HEMORRHAGE IN RSUP DR. MOHAMMAD HOESIN

Feisal Moulana¹, Abarham Martadiansyah², Iche Andriyani Liberty³

1. Program Studi Pendidikan Dokter, Fakultas Kedokteran, Universitas Sriwijaya
2. Departemen Obstetri dan Ginekologi, Fakultas Kedokteran, Universitas Sriwijaya
3. Bagian Ilmu Kesehatan Masyarakat Kedokteran Universitas Sriwijaya

Jl. Dr. Mohammad Ali Komplek RSMH Palembang RSMH Palembang Km. 3,5, Palembang, 30126, Indonesia

Email: feisalmoulana@yahoo.co.id

Abstrak

Perdarahan postpartum merupakan salah satu penyebab tingginya angka kematian ibu yaitu sebanyak 25 – 30% di negara berkembang, salah satunya Indonesia. Hal tersebut dikarenakan banyaknya faktor risiko yang mempunyai hubungan dengan kejadian perdarahan postpartum, maka dari itu penelitian mengenai faktor risiko terhadap kejadian perdarahan postpartum perlu dilakukan. Penelitian ini adalah penelitian observasional analitik menggunakan desain *cross sectional*. Sampel analisis dalam penelitian ini ialah pasien melahirkan yang memenuhi kriteria inklusi dan eksklusi sebanyak 200 subjek yang diambil dengan teknik *simple random sampling*. Penelitian ini menggunakan data sekunder dari rekam medik pasien di bagian Obstetri dan Ginekologi RSUP Dr. Mohammad Hoesin Palembang, lalu dianalisis menggunakan uji statistik *chi-square* dan regresi logistic biner dengan menggunakan STATA Ver. 15. Kasus perdarahan postpartum di RSUP Dr. Mohammad Hoesin pada periode 1 Januari 2015 – 31 Desember 2017 adalah 27,00%. Faktor risiko yang mempunyai hubungan dengan kejadian perdarahan postpartum adalah status gravida ibu (OR=18,532), status paritas ibu (OR=0,075), berat badan bayi lahir (10,825), dan hamil kembar (OR=0,116). Status gravida ibu, status paritas ibu, berat badan bayi lahir besar, dan hamil kembar merupakan faktor risiko yang mempengaruhi terjadinya perdarahan postpartum di RSUP Dr. Mohammad Hoesin Palembang.

Kata Kunci: Faktor Risiko, Perdarahan Postpartum

Abstract

Risk Factors of Postpartum Hemorrhage at RSUP Dr. Mohammad Hoesin Palembang. Postpartum hemorrhage is one of the most causes high maternal mortality rate of 25 – 30% in developing countries, such as Indonesia. This is because there are many risk factors that have a relationship with the incidence of postpartum hemorrhage, therefore studies on the risk factors for the incidence of postpartum hemorrhage is necessary. This study is observational analytic study with cross sectional design. The sample analysis in this study is patients who gave birth which met the inclusion and exclusion criteria as many as 200 subjects were taken by simple random sampling technique. This study uses secondary data from medical records of patients in the Obstetrics and Gynecology department of RSUP Dr. Mohammad Hoesin Palembang, then analyzed using the chi-square statistical test and binary logistic regression using STATA Ver. 15. The prevalence of postpartum hemorrhage cases in RSUP Dr. Mohammad Hoesin period January 1 st 2015 – December 31st 2017 is 27,00%. Risk factors that have a relationship with the incidence of postpartum hemorrhage are mother's gravida status (OR=18,532), mother's parity status (OR=0,075), birth weight (10,825), dan twin gestations (OR=0,116). Mother's gravida status, parity status, birth weight, dan twin gestations were risk factors that have relationship with postpartum hemorrhage in RSUP Dr. Mohammad Hoesin Palembang.

Keywords: Risk Factors, Postpartum Hemorrhage

1. Introduction

The maternal mortality rate is one indicator of the health sector development success. According to the World Health Organization, maternal mortality rate is the number of deaths during pregnancy or within a period of 42 days after the end of pregnancy, due to all causes related or aggravated by pregnancy or treatment, but not due to accident or injury. In

2014, the World Health Organization estimated that 800 women die every day due to complications of pregnancy and birth and 99% of all maternal deaths occur in developing countries and also 80% of maternal deaths are due to increased complications during pregnancy, childbirth and after delivery (WHO, 2016).

Maternal, infant and toddler mortality rates in Indonesia are still quite high. Based on the results of

the Indonesian Health Demographic Survey, maternal mortality rate in Indonesia in 2012 was 359 per 100,000 live births. The death's average rate is higher than the results of 2007 Indonesian Health Demographic Survey which reached 228 per 100,000 live births (Kementerian Kesehatan, 2014).

Postpartum hemorrhage is one of the causes high maternal mortality in Indonesia. Postpartum hemorrhage causes death as much as 25 -30% in developing countries (Sosa, 2009). In 2013, bleeding, especially postpartum hemorrhage, caused maternal mortality by 30.3% in Indonesia (Kementerian Kesehatan, 2015). According to (Caroli, Cuesta, Abalos, & Gulmezoglu, 2008) postpartum hemorrhage can be defined as blood loss from the genital tract as much as 500 mL or more within the first 24 hours after delivery, while severe postpartum hemorrhage can be defined as blood loss from the genital tract as much as 1000 mL or more in the first 24 hours after birth.

(Mukherjee & Arulkumaran, 2009) Postpartum hemorrhage is blood loss more than 500 mL after vaginal birth and blood loss more than 1000 mL during a caesarean section. According to (Rath, 2011) postpartum hemorrhage in general can be classified as primary postpartum hemorrhage is bleeding that occurs within the first 24 hours of labor and secondary postpartum haemorrhage which occurs more than 24 hours after delivery but less than 12 weeks. Postpartum hemorrhage is not a diagnosis but an event that must be known for its cause, for example postpartum hemorrhage caused by uterine atony, birth canal tear, residual placenta, and blood clotting disorders (Prawirohardjo, 2016).

Many factors are thought influencing the occurrence of postpartum hemorrhage, some of them that affect the incidence of postpartum hemorrhage including age of the mother, paritition status, prolonged labor, and large birth weight. Based on the results of the study (Krisnamurti, 2015) the age of mothers under 20 years and over 35 years has a risk of 2,503 times to experience postpartum hemorrhage when compared with mothers giving birth at the age of 20 - 35 years. Maternal age is a very important predisposing factor in the incidence of postpartum hemorrhage. The safest age for a woman to get pregnant and give birth is between 20-35 years, because she is in a healthy reproductive period. Women who are pregnant at the age of less than 20 years can harm maternal health and fetal growth and development, due to immaturity of reproductive organs to become pregnant, while women over 35 years of age have function of reproductive organs has decreased (Manuaba, 2009).

High maternal parity status can also be a risk factor that affects the occurrence of postpartum

hemorrhage. According to (Durmaz & Komurcu, 2018) thirteen studies showed an association between maternal parity and postpartum hemorrhage, 1,118,490 mothers were included in the analysis, then the number of primiparous mothers was 496,892, and the number of multiparous mothers was 621,598, then 51,138 mothers were found had postpartum hemorrhage and 1,067,352 did not experience postpartum hemorrhage. Higher incidence of postpartum hemorrhage in multiparous mothers In a study conducted by (Sharma, Pundir, Malhotra, & Arora, 2005) showed that the incidence of postpartum hemorrhage was higher in multiparous mothers. This is because the more often the mother gives birth, the reproductive function will decrease, the uterine muscle is too stretched and can not to contract normally so the risk of postpartum hemorrhage is greater (Putri, 2014).

Prolonged labor is labor that lasts more than 24 hours in primigravida and more than 18 hours in multiparas. The research was conducted by (Rahmawati, Suhartati, & Sulistiani, 2016) at Dr. Hospital. Mochammad Ansari Banjarmasin, from 78 postpartum hemorrhage respondents, there were 46 respondents (59%) who experienced prolonged labor and 32 respondents (41%) who did not experience prolonged labor with $p_value = 0.01$ showed that there was a significant relationship between prolonged delivery of postpartum hemorrhage. Prolonged labor increased the risk of postpartum hemorrhage by 2,715 times greater than that of women who did not experience prolonged labor (OR = 2,715). Prolonged labor can cause uterine inertia due to fatigue in the uterine muscles so that the uterus contracts weakly after the baby is born and can cause postpartum hemorrhage (Varney, Kriebs, & Geger, 2007).

Based on the results of research conducted by (Putri, 2014) in the Obstetrics and Gynecology Department of Dr. RSUP Mohammad Hoesin Palembang from January 1, 2012 to December 31, 2012, it was found that 101 patients (9.9%) had early postpartum bleeding from all mothers who gave birth vaginally. Most patients with early postpartum hemorrhage were referral patients (98 cases; 97.02%) with the highest cause of bleeding by placental retention, ie 44 patients (43.6%), followed by birth road lacerations 25 patients (25.7%), the remaining placenta was 21 cases (21.8%) and only 8 cases (8.9%) caused by uterine atony (Putri, 2014).

Based on the description of the background above, with the many risk factors that influence the incidence of postpartum hemorrhage and is one of the causes of high maternal mortality, the study of risk factors for the incidence of postpartum hemorrhage is very necessary. Knowing these risk factors will

certainly be useful as a promotive and preventive effort for postpartum hemorrhage. Considering that the maternal mortality rate in Indonesia is still very high to reach the SDGs (Sustainable Development Goals) target in 2030, namely reducing maternal mortality to below 70 per 100,000 live births (Kementerian Kesehatan, 2015).

2. Methods

This study was an observational analytic study with a cross sectional design that uses secondary data from medical records of patients in the Obstetrics and Gynecology department of Dr. RSUP. Mohammad Hoesin Palembang. The research was conducted at RSUP Dr. Mohammad Hoesin Palembang, where the data used to come from the Medical Record Section of the RSUP Dr. Mohammad Hoesin Palembang. The time of the study was August 2018 - December 2018.

The population of this study was all patients who giving birth in the Obstetrics and Gynecology Department of Dr. Mohammad Hoesin Palembang period January 1, 2015 - December 31, 2017. The research sample was obtained by using probability sampling method with simple random sampling technique, which is a sampling technique by calculating the minimum number of samples first, then randomly select subjects who have complete medical record data, readable and has the same probability of being a sample of all the events of postpartum hemorrhage in Dr. RSUP Mohammad Hoesin Palembang period 1 January 2015 - 31 December 2017

In this study the samples used were patients in the Obstetrics and Gynecology department of Dr. RSUP. Mohammad Hoesin Palembang who fulfilled the inclusion criteria and did not meet the exclusion criteria. The inclusion criteria in this study were patients who had a medical record of childbirth in the Obstetrics and Gynecology section of Dr. General Hospital. Mohammad Hoesin Palembang period 1 January 2015 - 31 December 2017 and patients who have medical records that contain all the variables studied and include diagnoses. While the exclusion criteria in this study were patients who had medical records with a disability (torn or wet) and patients who had medical records that were difficult to read.

Data from medical records that are in accordance with inclusion and exclusion criteria will be arranged, sorted, and grouped. Data is then processed with the STATA version 15 program (College Station, Texas 77845 USA)

3. Result

In this study 200 data were collected using secondary data from the medical records of maternity at the Obstetrics and Gynecology Department of Dr.

RSUP. Mohammad Hoesin Palembang period 1 January 2015 - 31 December 2017.

Tabel 1. Frequency Distribution of Postpartum Bleeding Events (n = 200)

Postpartum Hemorrhage	Frequency	
	n	%
Yes	54	27,00
No	146	73,00

Table 1 above shows data on the distribution of research subjects based on the incidence of postpartum hemorrhage in the obstetrics and gynecology department of Dr. RSUP. Mohammad Hoesin Palembang period January 1, 2015 - December 31, 2017. The total subjects in this study amounted to 200 people consisting of 54 (27.0%) people who experienced postpartum hemorrhage and 146 (73.0%) people who did not experience postpartum hemorrhage.

Table 2 below shows the data on the frequency distribution of risk factors for postpartum hemorrhage in this study. The age grouping of mothers is divided into two categories, including the age of at-risk mothers, those aged <20 years and ≥35 years, and the age of mothers who are not at risk, aged 20–35 years. Most mothers have ages 20-35 years with 147 (73.50%), 53 (26.50%) have ages <20 years and ≥35 years.

Tabel 2. Distribution of Age-Based Postpartum Bleeding Risk Factors (n = 200)

Mother's Age	Frequency	
	n	%
<20 atau ≥35 years old	53	26,50
20 – 35 years old	147	73,50

Table 3 shows data on the frequency distribution of risk factors for postpartum hemorrhage in this study. The grouping of mother's BMI is divided into two categories including BMI of at-risk mothers, namely underweight, overweight, and obese, and maternal BMI that is not at risk which is normal. Most mothers have 152 (76.00) people underweight, overweight or obese and as many 48 (24.00%) people have a normal BMI.

Tabel 3. Distribution of Risk Factors for Postpartum Bleeding Based on BMI (n = 200)

IMT Ibu	Frequency	
	n	%
Underweight, Overweight, atau Obese	152	76,00
Normal	48	24,00

Table 4 below shows data on the frequency distribution of risk factors for postpartum hemorrhage in this study. The grouping of maternal gravida status was divided into two categories,

including risky gravida status, namely multigravida and grandemultigravida, and primigravida maternal gravida status. Most of the mothers had multigravida and grandemultigravida gravida status of 138 (69.00%) people and 62 (31.00%) people had primigravida gravida status.

Tabel 4. Distribution of Postpartum Bleeding Risk Factors Based on Maternal Gravida Status (n = 200)

Mother's Gravida Status	Frequency	
	n	%
Multigravida atau Grandemultigravida	138	69,00
Primigravida	62	31,00

Tabel 5. Distribution of Risk Factors for Postpartum Bleeding Based on Maternal Parity Status (n = 200)

Mother's Parity Status	Frequency	
	n	%
Multipara atau Grandemultipara	122	61,00
Primipara	78	39,00

Table 5 above shows data on the frequency distribution of risk factors for postpartum hemorrhage in this study. The grouping of maternal parity status is divided into two categories, including risky parity status, namely multipara and grandemultipara, and maternal parity status that is not at risk, namely primiparous. Most mothers have multiparous parity status and grand culture of 122 (61.00%) and 78 (39, 00%) people have primipara parity status..

Table 6 shows data on the frequency distribution of risk factors for postpartum hemorrhage in this study. The grouping of large-born babies is divided into two categories, including large birth weight at risk, namely large birth weight, and large birth weight is not at risk, namely the birth weight of a normal baby. Most mothers give birth to babies with not large weight 196 (98.00%) people and only 4 (2.00%) people gave birth to babies with large body weight.

Tabel 6. Distribution of Risk Factors for Postpartum Bleeding Based on Large Birth Weight (n = 200)

Baby Large Birth Weight	Frequency	
	n	%
Yes	4	2,00
No	196	98,00

Tabel 7. Distribus of Postpartum Bleeding Risk Factors Based on Twin Pregnancy (n = 200)

Twin Pregnancy	Frequency	
	n	%
Yes	32	16,00
No	168	84,00

Table 7 above shows data on the frequency distribution of risk factors for Postpartum Bleeding in this study. Grouping of pregnant twins is divided into two categories including pregnant twins who are at risk, namely twin pregnancies, and pregnant twins who are not at risk, namely not twins pregnant. Most mothers gave birth to single babies with 168 (84.00%) people and 32 (16.00%) mothers gave birth to twins.

Tabel 8. Distribution of Postpartum Bleeding Risk Factors Based on History of Previous Postpartum Bleeding (n = 200)

History of Previous Postpartum Bleeding	Frequency	
	n	%
Yes	8	4,00
No	192	96,00

Table 8 above shows data on the frequency distribution of risk factors for Postpartum Bleeding in this study. Grouping history of postpartum hemorrhage is divided into two categories including a history of previous postpartum hemorrhage which is at risk of having a history of previous postpartum hemorrhage, and a history of non-risk postpartum haemorrhage that does not have a history of previous postpartum hemorrhage. Most mothers did not have a history of previous postpartum hemorrhage as many as 192 (96.00%) people and only 8 (4.00%) mothers had a history of previous postpartum hemorrhage.

In table 9 it can be seen that of 53 mothers aged <20 or ≥35 years as many as 11 (20.75%) people who experienced postpartum hemorrhage and 42 (79.25%) people who did not experience postpartum hemorrhage, whereas from 147 mothers who aged 20 - 35 years as many as 43 (29.25%) people who experience postpartum hemorrhage and 104 (70.75%) people who do not experience postpartum hemorrhage.

The p value obtained based on the Chi-square test results is 0.232 (p> 0.05). These results indicate that there is no significant relationship between the age of the mother and the incidence of postpartum hemorrhage. Odd ratio was obtained at 0.633 (0.269 - 1.403) which means that mothers aged <20 or ≥35 had an opportunity of 1.579 times not to experience postpartum hemorrhage compared to mothers aged 20-35 years.

Tabel 9. Relationship between Maternal Age and Postpartum Bleeding

Usia Ibu	Perdarahan Postpartum (Ya)		Perdarahan Postpartum (Tidak)		Total	Pvalue	OR	
	n	%	n	%				
	<20 atau ≥35 tahun	11	20,75	42				79,25
20-35 tahun	43	29,25	104	70,75	147	100		

Tabel 10. Relationship between BMI and Postpartum Bleeding

IMT Ibu	Perdarahan Postpartum (Ya)		Perdarahan Postpartum (Tidak)		Total	Pvalue	OR
	n	%	n	%			

	n	%	n	%	n	%		
Underweight, Overweight, atau Obese	42	25	110	75,50	152	100	0,720	1,145
Normal	12	27,63	36	72,37	48	100		

In table 10 above, it can be seen that of 152 mothers who had underweight, overweight, or obesity BMI as many as 42 (2.00%) people who had postpartum hemorrhage and 110 (75.50%) people who did not experience postpartum hemorrhage, while 48 mothers who had normal BMI were 12 (27.63%) people who had postpartum hemorrhage and 36 (72.37%) people who did not experience postpartum hemorrhage.

Nilai p yang didapatkan berdasarkan hasil uji *Chi-square* adalah sebesar 0,720 ($p > 0,05$). Hasil ini menunjukkan bahwa hubungan tidak signifikan antara IMT ibu dengan kejadian perdarahan postpartum. Nilai *odd ratio* didapatkan sebesar 1,145 (0,520–2,654) yang berarti ibu yang memiliki IMT *underweight, overweight, atau obese* memiliki risiko sebesar 1,145 kali untuk mengalami perdarahan postpartum dibandingkan dengan ibu yang memiliki IMT normal.

The p value obtained based on the Chi-square test results is 0.720 ($p > 0.05$). These results indicate that there is no significant relationship between BMI of mothers and the incidence of postpartum hemorrhage. Odd ratio was obtained at 1.145 (0.520-2.6654) which means that mothers who have IMT *underweight, overweight, or obesity* have a risk of 1,145 times to experience postpartum hemorrhage compared to mothers who have a normal BMI.

The p value obtained based on the Chi-square test results is 0.020 ($p < 0.05$). These results indicate that there is a significant relationship between maternal gravida status and the incidence of postpartum hemorrhage. The odd ratio value was 2,434 (1,087 - 5,860) which meant that mothers with multigravida gravida status and grandemultravida had a risk of 2,434 times to experience postpartum hemorrhage compared to women with gravida primigravida status.

Tabel 11. Relationship between Mother Gravida's Status and Postpartum Bleeding

Status Gravida Ibu	Perdarahan Postpartum (Ya)		Perdarahan Postpartum (Tidak)		Total	Pvalue	OR	
	n	%	n	%				
Multigravida atau Grandemulti gravida	44	31,88	94	68,12	138	100	0,020	2,434
Primigravida	10	16,13	52	83,87	62	100		

Tabel 12. Relation of Maternal Parity Status to Postpartum Bleeding

Status Paritas Ibu	Perdarahan Postpartum (Ya)		Perdarahan Postpartum (Tidak)		Total	Pvalue	OR	
	n	%	n	%				
Multipara atau Grandemulti para	31	25,41	91	74,59	122	100	0,526	0,814
Primipara	23	29,49	55	70,51	78	100		
Total	54	27,00	146	73,00	200	100		

In table 12 above, it can be seen that of 122 women in the multiparous and grand-multi-category categories, 31 (25.41%) experienced postpartum bleeding and 91 (74.59%) people who did not experience postpartum hemorrhage, while 78 of the primiparous women 23 (29.49%) people who experienced postpartum hemorrhage and 55 (70.51%) people who did not experience postpartum hemorrhage.

The p value obtained is based on the Chi-square test results of 0.526 ($p > 0.05$). These results indicate that the relationship is not significant between maternal parity status and the incidence of postpartum hemorrhage. Odd ratio was obtained 0.814 (0.412 - 1.623) which means that the parity status of mothers with multiparous categories and grand culture was had a chance of 1,228 times not to experience postpartum hemorrhage compared to maternal parity status in the primipara category.

Tabel 13. Relationship between Large Birth Weight and Postpartum Bleeding

Berat Badan Bayi Lahir Besar	Perdarahan Postpartum (Ya)		Perdarahan Postpartum (Tidak)		Total	Pvalue	OR	
	n	%	n	%				
Ya	3	75,00	1	25,00	4	100	0,029	8,529
Tidak	51	26,02	145	73,98	196	100		

In table 13 above it can be seen that of the 4 mothers who gave birth to babies with large body weight as many as 3 (75.00%) people who experienced postpartum hemorrhage and 1 (25.00%) people who did not experience postpartum bleeding, whereas from 196 mothers who gave birth babies with normal weight as many as 51 (26.02%) people who experience postpartum hemorrhage and 145 (73.98%) people who do not experience postpartum bleeding.

The p value obtained based on the Chi-square test results is 0.029 ($p < 0.05$). These results indicate that there is a significant relationship between large birth weight and the incidence of postpartum hemorrhage. Odd ratio was obtained at 8.529 (0.659 - 450,695) which means that mothers who gave birth to babies with large birth weight had a risk of 8.529 times to experience postpartum hemorrhage compared to mothers who gave birth to babies of normal birth weight.

Tabel 14. Relationship to Twin Pregnancy with Postpartum Bleeding

Hamil Kembar	Perdarahan Postpartum (Ya)		Perdarahan Postpartum (Tidak)		Total	Pvalue	OR	
	n	%	n	%				
Ya	1	3,12	31	96,88	32	100	0,001	0,069
Tidak	53	31,55	115	68,45	168	100		

In table 14 it can be seen that from 32 mothers with twin pregnancies as many as 1 (3.12%) people who experienced postpartum hemorrhage and 53 (31.55%) people who did not experience postpartum bleeding, whereas from 168 mothers with single pregnancy as many as 31 (96, 88%) people who

experienced postpartum hemorrhage and 115 (68.45%) people who did not experience postpartum hemorrhage.

The p value obtained is based on the Chi-square test result of 0.001 ($p < 0.05$). These results indicate that there is a significant relationship between pregnant twins and the incidence of postpartum hemorrhage. The odds ratio obtained is 0,069 (0,001–0,447), which means that pregnant women have a chance of 14,492 times not to experience postpartum hemorrhage compared to those who are not twins. Nilai p yang didapatkan berdasarkan hasil uji *Chi-square* sebesar 0,001 ($p < 0,05$).

Tabel 15. Relationship to History of Previous Postpartum Bleeding with Postpartum Bleeding

Riwayat Perdarahan Postpartum Sebelumnya	Perdarahan Postpartum (Ya)		Perdarahan Postpartum (Tidak)		Total		pvalue	OR
	n	%	n	%	n	%		
Ya	8	100,0	0	0,00	8	100,0	0,000	
Tidak	46	23,96	146	76,04	192	100,0		

In table 15 it can be seen that of the 8 mothers who had a history of previous postpartum hemorrhage as many as 8 (100.0%) people who experienced postpartum hemorrhage and 0 (00.00%) people who did not experience postpartum hemorrhage, whereas from 192 mothers who did not have bleeding history in the previous postpartum there were 46 (23.96%) people who experienced postpartum hemorrhage and 146 (76.04%) people who did not experience postpartum hemorrhage.

The p value obtained is based on the Chi-square test result of 0,000 ($p < 0.05$). These results indicate that there is a significant relationship between the history of previous postpartum hemorrhage and the incidence of postpartum hemorrhage. The value of ratiot odds was not found in this study because there were no subjects with a history of previous postpartum wasting who did not experience postpartum hemorrhage.

Tabel 16. Analysis of the Relationship of Variables with Postpartum Bleeding

Variabel Penelitian	B	Standard Error	P	Exp (B)
Status Gravidia Ibu	2,920	0,738	0,000	18,532
Status Paritas Ibu	-2,579	0,691	0,000	0,075
Berat Badan Bayi Lahir Besar	2,381	1,175	0,043	10,825
Hamil Kembar	-2,145	1,037	0,039	0,116
Riwayat Perdarahan Postpartum Sebelumnya	0	(omitted)		

In Table 16 there are 4 variables that have a relationship with the incidence of postpartum hemorrhage in Dr. RSUP Mohammad Hoesin Palembang Period 1 January 2015 - 31 December 2017 namely maternal gravida status, maternal parity status, large birth weight and twin pregnancies.

Odd ratio was obtained for 18,532 (4,358-78,801) for maternal gravida status, 0,075 (0,019-0,293) for maternal parity status, 10,825 (1,080-108,421) for large birth weight babies, and 0,116

(0,015-0,893) for twins pregnant So that the most dominant risk factor that has a relationship with the incidence of postpartum hemorrhage is maternal gravida status.

4. Discussion

Postpartum Hemorrhage Distribution

This study shows the subjects distribution based on the incidence of postpartum hemorrhage in the Obstetrics and Gynecology Department of Dr. RSUP. Mohammad Hoesin Palembang Period January 1, 2015 - December 31, 2017. The total subjects in this study were 200 subjects consist of 54 (27.0%) subjects who had postpartum hemorrhage and 146 (73.0%) subjects who did not experience postpartum hemorrhage.

Most patients with postpartum hemorrhage in this study were referral patients from other health facilities, so the previous medical history/data were not listed in the medical record. Incomplete data causes other variables that have a relationship with postpartum hemorrhage such as prolonged labor cannot be studied. Incomplete data also cause differences in the variables of maternal BMI, in which patients experience postpartum haemorrhage, maternal BMI is measured after delivery because patients with postpartum hemorrhage are mostly referral patients from other health facilities and in patients who do not experience postpartum haemorrhage the mother's BMI is measured before delivery.

Relationship between Maternal Age and Postpartum Hemorrhage

There is no significant association between maternal age and postpartum hemorrhage is not significant ($p \text{ value} = 0.232$). Odd ratio was obtained at 0.633 (0.269 - 1.403) which means that mothers aged < 20 or ≥ 35 had an opportunity of 1.579 times not to experience postpartum hemorrhage compared to mothers aged 20-35 years.

The results of this study are in line with the research carried out in Dr. RSUP Mohammad Hoesin said that maternal age did not significantly affect the incidence of early postpartum hemorrhage with ($p = 0.65$)(17). But not in accordance with the results of the study also in accordance with the results of the study that postpartum mothers with a risky age of < 20 years or > 35 years had a risk of postpartum hemorrhage 7,347 times greater than that of mothers with non-risk ages, 20-35 year(18).

At the age of less than 20 years is a high risk of pregnancy that threatens the safety of mother and baby, this is caused at a young age the reproductive organs and physiological functions are not optimal and psychologically and emotionally mature enough, which will affect the acceptance of her pregnancy

which will eventually have an impact on the process of pregnancy, childbirth, until the puerperium period (19).

In this study maternal age did not have a statistically significant effect on postpartum hemorrhage due to the incidence of postpartum hemorrhage between mothers at risk of <20 or ≥ 35 and not at risk, 20 - 35 years showing no difference in the number of proportions statistically. obtained is not significant.

Association between Mother's BMI and Postpartum Hemorrhage

Based on the results of this study obtained a shows that there is no significant relationship between maternal BMI and postpartum hemorrhage ($p=0.720$). The odds ratio obtained was 1.145, which means that BMI of underweight, overweight, or obese mothers had a risk of 1,145 times to experience postpartum hemorrhage compared to normal maternal BMI.

The results of this study are not in line with the research conducted in Northern Ireland with a cohort method on 30,298 subjects found that a significant relationship was found between body mass index and postpartum hemorrhage ($p = 0.001$)(20). In addition, the study in Morocco from October 2010 to October 2011 in 1,408 participants found a significant relationship $p = 0.03$ ($p < 0.05$)(21).

The study with a cohort design in single pregnancies who gave birth on January 1, 2002 to December 31, 2011 found a relationship between BMI and postpartum hemorrhage 0.087 ($p > 0.05$)(22). The study with a cohort design on maternal body mass index and risk at birth and health of pregnant women found a non-significant relationship between postpartum hemorrhage and underweight(22). However, in overweight and obese subjects, there was a significant relationship ($p < 0.001$). In this study maternal BMI not statistically influencing postpartum haemorrhage could be caused by the subjects taken in this study in different categories where subjects who experienced postpartum hemorrhage had maternal BMI measured after delivery and BMI of mothers who did not experience postpartum hemorrhage measured before delivery.

Association between Mother Gravida's Status and Postpartum Hemorrhage

There was a significant relationship between maternal gravida status and the incidence of postpartum hemorrhage. Gravida status of mothers in the multigravida and grandigravida categories had a risk of 2,434 times to experience postpartum hemorrhage compared to maternal gravida status in the primigravida category. This study is in line with the theory of the gravid factors that multigravida

mothers have an increased risk of anemia of 6.588 times compared to primigravida mothers, and grandemultravida mothers also have an increased risk of anemia 5.789 than primigravida mothers (24). Anemia is affected by frequent pregnancy and childbirth, the more often a woman experiences pregnancy and childbirth, the more iron will be lost and the more anemic. Parity affects the incidence of anemia in pregnancy, the more often a woman becomes pregnant and gives birth, the greater the risk of anemia because pregnancy depletes iron reserves in the body (24).

In addition, it is also known that the maternal gravida status has a significant relationship to the incidence of chronic energy deficiency. From the gravida factor it is known that multigravida mothers have a possibility of 1,021 times to experience chronic energy deficiency compared to primigravida mothers, then grandemultravida mothers are also likely to be 3,200 times more likely to experience chronic energy deficiency compared to primigravida mothers. This shows that the more often mothers experience pregnancy, the more likely it is to experience chronic energy shortages. Chronic energy deficiency can cause anemia which is one of the risk factors for postpartum hemorrhage (24).

Association of Maternal Parity Status to Postpartum Hemorrhage

Based on the results of this study shows that the relationship between maternal parity status and the incidence of postpartum hemorrhage is not significant. The results of this study are in line with the research which obtained p value = 0.49, based on these results, it can be concluded that parity does not significantly affect postpartum hemorrhage (25). In accordance with the research conducted at Dr. General Hospital Pirngadi Medan states that parity does not significantly affect primary postpartum hemorrhage (26).

However this study is not in accordance with the research which states there is a relationship between parity and the incidence of postpartum hemorrhage ($p < 0.001$)(27). This study reports that the greater the parity, the higher the incidence of postpartum hemorrhage. The incidence of postpartum hemorrhage is more likely because the uterus that has given birth to many children tends to work inefficiently at each stage of labor. The uterus has undergone a change in elasticity. The more elastic and the bigger the size, the weaker the uterine contractions, so that the uterine contractions become weak and bleeding (28).

In this study maternal parity status did not have a statistically significant effect on postpartum hemorrhage due to the incidence of postpartum hemorrhage between the risky parity status of

women, namely multipara and grandemultipara and not at risk, primipara showed no difference in the number of proportions statistically, this resulted in insignificant relationships.

Association between Large Birth Weight and Postpartum Hemorrhage

Large birth weight has a significant relationship with the incidence of postpartum hemorrhage. The odds ratio obtained was 8.529, which means that the weight of a large birth baby has a risk of 8.529 times to experience postpartum hemorrhage compared to a normal birth weight.

This study is in line with the study which shows a positive relationship between large birth weight and postpartum hemorrhage ($p < 0.001$) (27). The higher the birth weight, the higher the incidence of postpartum hemorrhage. The birth of macrosomia (4000 grams) can cause postpartum hemorrhage due to uterine overstretch and result in ineffective contractions that can occur postpartum hemorrhage (29). The uterine overstretch causes macrosomic babies who need more space in the uterus, so that uterine contractions are not maximal or the uterus does not contract properly. If the uterus cannot contract, the uterus will bleed normally, or called bleeding (30).

According to who conducted the study and obtained similar results, infants weighing more than 4000 grams tended to increase the incidence of early postpartum hemorrhage (31). This is because the size of a large baby can make the uterine strain too large so that it is more at risk for uterine atony and ultimately postpartum hemorrhage (19). In addition, the possibility for the birth canal injury will also increase (32).

This research is in line with the theory that infants with birth weight $\geq 4,000$ grams are associated with postpartum hemorrhage, which is due to birth canal lacerations (19). More birth weight babies also cause overdistention of the uterus so that it is more at risk of causing uterine atony and ultimately causes postpartum hemorrhage.

Association Between Twin Pregnancy with Postpartum Hemorrhage

In this study, twin pregnancies have a significant relationship with the incidence of postpartum hemorrhage. The results of this study are not in accordance with the theory which states that the causes of excessive uterine stretching include multiple pregnancies, polyhydramnios, fetal macrosomia or large fetuses (33). Excessive uterine stretching due to multiple pregnancies results in the uterus not being able to contract immediately after the placenta is born so that it often causes postpartum hemorrhage in the mother giving birth. In this condition the myometrium stretches so severely that

uterine contractions after the birth of the baby become inefficient.

Association Between History of Previous Postpartum Hemorrhage with Postpartum Hemorrhage

This study shows there is a significant relationship between previous history of postpartum hemorrhage and the incidence of postpartum hemorrhage. This study is in line with research which states that there is no relationship between the history of postpartum hemorrhage and postpartum hemorrhage in mothers giving birth at RSUP Dr. Mohammad Hoesin Palembang in 2013 because the odd ratio could not be obtained because there were no subjects with a history of previous postpartum hemorrhage who did not experience postpartum hemorrhage (9).

The results of this study are not in accordance with the research in the Dr Hospital H. Abdul Moeloek Lampung, who stated that the history of postpartum hemorrhage had a significant association with the incidence of postpartum hemorrhage with Odd Ratio 7,408 (95% CI: 3,781-14,517) (34).

In this study a previous history of postpartum haemorrhage was not significantly affected postpartum hemorrhage because there were no subjects with a history of previous postpartum hemorrhage who did not experience postpartum hemorrhage, so the value of the relationship between history of postpartum hemorrhage and postpartum hemorrhage could not be calculated.

In the study there are 4 variables that have a relationship with the incidence of postpartum hemorrhage in Dr. RSUP Mohammad Hoesin Palembang Period 1 January 2015 - 31 December 2017 namely maternal gravida status, maternal parity status, large birth weight and twin pregnancies. Odd ratio was obtained for 18,532 (4,358-78,801) for maternal gravida status, 0,075 (0,019-0,293) for maternal parity status, 10,825 (1,080-108,421) for large birth weight babies, and 0,116 (0,015-0,893) for twins pregnant so the most dominant risk factor affecting the incidence of postpartum hemorrhage is maternal gravida status.

There are differences between the results of this study and those carried out by (17) which state that the most meaningful and the most dominant factor has a relationship to the incidence of early postpartum hemorrhage, indicate that mothers who gave birth to babies weighing > 4000 grams were the greatest risk factors affecting early postpartum hemorrhage with an effect strength of 5.53 times.

The differences in the results of this study occur because each of these studies has different research designs, types of data collected, and differences in risk factors studied.

The limitation of this study is this study are the incomplete data contained in the medical record. Most are caused because the patient is a reference from other health facilities, so that the previous medical history/data is not listed in the medical record. Incomplete data also causes other variables that can influence the onset of postpartum hemorrhage such as prolonged labor that cannot be studied. Incomplete data also cause differences in the variables of maternal BMI, in which patients experience postpartum haemorrhage, maternal BMI is measured after delivery because patients with postpartum hemorrhage are mostly referral patients from other health facilities and in patients who do not experience postpartum haemorrhage the mother's BMI is measured before delivery.

The process of recording medical records is less neat, causing a medical record that cannot be read. Medical record recording is also sometimes less accurate or inaccurate causing information bias. So that it causes differences in the results of the data compared to the existing theories.

5. Conclusion

Based on the research that has been done at the RSUP Dr. Mohammad Hoesin, it can be concluded the risk factor that has a relationship with postpartum hemorrhage is gravida status (OR = 18,532); parity status (OR = 0.075); large birth weight (OR = 10,825); and pregnant twins (OR = 0.116). While the most dominant risk factor that has a relationship with postpartum hemorrhage is gravida status (OR = 18,532).

References

1. WHO WHO. World health statistics 2016: monitoring health for the SDGs sustainable development goals. World Health Organization; 2016.
2. Kementerian Kesehatan RI. Profil Kesehatan RI 2013. Jakarta; 2014.
3. Sosa E. Reflective knowledge: Apt belief and reflective knowledge. Vol. 2. Oxford University Press; 2009.
4. Kementerian Kesehatan RI. Kesehatan dalam kerangka sustainable development goals (SDGs). Jakarta Kementrian Kesehat RI. 2015;
5. Carroli G, Cuesta C, Abalos E, Gulmezoglu AM. Epidemiology of postpartum haemorrhage: a systematic review. *Best Pract Res Clin Obstet Gynaecol*. 2008;22(6):999–1012.
6. Mukherjee S, Arulkumaran S. Post-partum haemorrhage. *Obstet Gynaecol Reprod Med*. 2009;19(5):121–6.
7. Rath WH. Postpartum hemorrhage—update on problems of definitions and diagnosis. *Acta Obstet Gynecol Scand*. 2011;90(5):421–8.
8. Prawirohardjo S. Ilmu Kebidanan. Jakarta Yayasan Bina Pustaka Sarwono Prawirohardjo. 2016;
9. Krisnamurti F. Hubungan Antara Ibu dan Perdarahan Postpartum (Studi Kasus Kontrol Pasien Rawat Inap RSUP dr. Mohammad Hoesin Palembang periode 1 Januari 2013 sampai 31 Desember 2013). Skripsi pada Jur Fak Kedokt Univ Sriwij yang tidak dipublikasikan. 2015;29–47.
10. Manuaba IBG. Ilmu kebidanan, penyakit kandungan & keluarga berencana untuk pendidikan bidan. In EGC; 2009.
11. Durmaz A, Komurcu N. Relationship between maternal characteristics and postpartum hemorrhage: a meta-analysis study. *LWW*; 2018.
12. Sharma JB, Pundir P, Malhotra M, Arora R. Evaluation of placental drainage as a method of placental delivery in vaginal deliveries. *Arch Gynecol Obstet*. 2005;271(4):343–5.
13. Putri FY. Faktor Risiko Perdarahan Postpartum Dini pada Pasien dengan Persalinan Normal di Bagian Kebidanan dan Penyakit Kandungan RSUP dr. Mohammad Hoesin Palembang. Jur Fak Kedokt Univ Sriwij yang tidak dipublikasikan. 2014;34–41.
14. Rahmawati D, Suhartati S, Sulistiani E. Hubungan Partus Lama dan Anemia dengan Kejadian Perdarahan Postpartum di Ruang VK Bersalin RSUP DR. H. Moch Ansari Saleh Banjarmasin. *Din Kesehat J KEBIDANAN DAN KEPERAWATAN*. 2016;7(2):1–10.
15. Varney H, Kriebs JM, Gegor CL. Buku ajar asuhan kebidanan. Jakarta Egc. 2007;245–9.
16. Mukherjee S, Arulkumaran S. Postpartum Haemorrhage. *Obstet Gynaecol Reprod Med*. 2009;19(5):121–6.
17. Putri FY. Faktor Risiko Perdarahan Postpartum Dini pada Pasien dengan Persalinan Normal di Bagian Kebidanan dan Penyakit Kandungan RSUP dr. Mohammad Hoesin Palembang. Skripsi pada Jur Fak Kedokt Univ Sriwij yang tidak dipublikasikan. 2014;34–41.
18. Sari WK, Widaryati W. Hubungan Umur dan Paritas dengan kejadian Perdarahan Postpartum di RSU PKU Muhammadiyah Bantul 2012-2014. *STIKES'Aisyiyah Yogyakarta*; 2015.
19. Cunningham, Leveno K, Bloom S, Spong CY, Dashe J. *Williams Obstetrics*, 24e. Mcgraw-hill; 2014.
20. Scott-Pillai R al, Spence D, Cardwell CR, Hunter A, Holmes VA. The impact of body mass index on maternal and neonatal outcomes: a retrospective study in a UK obstetric

- population, 2004–2011. *BJOG An Int J Obstet Gynaecol.* 2013;120(8):932–9.
21. Mochhoury L, Razine R, Kasouati J, Kabiri M, Barkat A. Body mass index, gestational weight gain, and obstetric complications in Moroccan population. *J Pregnancy.* 2013;2013.
 22. Crane JMG, Murphy P, Burrage L, Hutchens D. Maternal and perinatal outcomes of extreme obesity in pregnancy. *J Obstet Gynaecol Canada.* 2013;35(7):606–11.
 23. Rahman MM, Abe SK, Kanda M, Narita S, Rahman MS, Bilano V, et al. Maternal body mass index and risk of birth and maternal health outcomes in low-and middle-income countries: a systematic review and meta-analysis. *Obes Rev.* 2015;16(9):758–70.
 24. Rizkah Z, Mahmudiono T. Hubungan Antara Umur, Gravida, Dan Status Bekerja Terhadap Resiko Kurang Energi Kronis (KEK) Dan Anemia Pada Ibu Hamil. *Amerta Nutr.* 2017;1(2):72–9.
 25. Eriza N, Defrin D, Lestari Y. Hubungan Perdarahan Postpartum dengan Paritas di RSUD Dr. M. Djamil Periode 1 Januari 2010-31 Desember 2012. *J Kesehat Andalas.* 2015;4(3).
 26. Lubis IK. Pengaruh Paritas Terhadap Perdarahan Postpartum Primer Di RSUD DR Pirngadi Medan 2007-2010. Pengaruh Parit Terhadap Perdarahan Postpartum Prim Di RSUD DR Pirngadi Medan 2007-2010. 2011;
 27. Ristanti AD, Lutfiasari D, Pradian G, Pujiastuti SE. The Correlation between Parity and Baby Weight to The Incidence of Postpartum Hemorrhage. In: *Proceedings of the International Conference on Applied Science and Health.* 2017. p. 115–20.
 28. Kramer MS, Berg C, Abenhaim H, Dahhou M, Rouleau J, Mehrabadi A, et al. Incidence, Risk Factors, and Temporal Trends in Severe Postpartum Hemorrhage. *Am J Obstet Gynecol.* 2013;209(5):449-e1.
 29. Olmedo B, Miranda E, Cordon O, Pettker CM, Funai EF. Improving Maternal Health and Safety Through Adherence to Postpartum Hemorrhage Protocol in Latin America. *Int J Gynecol Obstet.* 2014;125(2):162–5.
 30. Zubor P, Kajo K, Dokus K, Krivus S, Straka L, Bodova KB, et al. Recurrent Secondary Postpartum Hemorrhages due to Placental Site Vessel Subinvolution and Local Uterine Tissue Coagulopathy. *BMC Pregnancy Childbirth.* 2014;14(1):80.
 31. Purwanti S, Trisnawati Y. Pengaruh Umur dan Jarak Kehamilan Terhadap Kejadian Perdarahan Karena Atonia Uteri. *Bidan Prada J Publ Kebidanan Akbid YLPP Purwokerto .* 2016;
 32. Supono. Ilmu Kebidanan Bab Fisiologi. Bagian Dep Obstet dan Ginekol Fak Kedokt Univ Sriwijaya, Palembang, Indones. 2004;
 33. Varney H, Kriebs JM, Gegor CL. Buku Ajar Asuhan Kebidanan. Jakarta EGC. 2007;245–9.
 34. Dewi R, Yamin M. Faktor Risiko yang Berhubungan dengan Perdarahan Postpartum. *J Kesehat Vol II, Nomor 1.* 2011;