

# Parity with Risk and Increased Incidence of Postpartum Hemorrhage

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## ABSTRACT

**Background:** Hemorrhage becomes the primary cause of maternal mortality in Indonesia. One of the contributing factors is parity.

**Aim:** This study aims to determine the correlation between equality and postpartum hemorrhage incidence in Sleman District Hospital. The ethics commission has approved the research of Universitas 'Aisyiyah of Yogyakarta.

**Method:** This case-control study involved 34 case respondents (women at childbirth with maternal postpartum hemorrhage) and 34 control respondents (women at delivery without postpartum hemorrhage).

**Results:** The chi-square test results showed that parity with the risk increased the risk of postpartum hemorrhage five times higher than equivalence without risk (p-value: 0.002 and 95% CI: 1.806-14.436).

**Conclusion:** Parity is a risk factor for the occurrence of postpartum hemorrhage in Sleman District Hospital.

Parity with risk (parity of 1 or  $\geq 3$ ) increases the risk of postpartum hemorrhage by fivefold.

**Keywords:** Parity, postpartum hemorrhage

## INTRODUCTION

Based on Indonesian Demographic and Health Survey (SDKI) in 2012, the Maternal Mortality Rate in Indonesia reached 359 per 100,000 live births [1]. In Sleman District, it was 87.6 per 100,000 live births. As much as 27% of maternal mortality in Indonesia was caused by hemorrhage, 14% was because of hypertension, and 11% was due to sepsis [2]. The maternal mortality rate found in hospitals in Indonesia ranged from 1.5 to 3.0, with the most cases of hemorrhage, infection, and eclampsia [3]. Meanwhile, hemorrhage and eclampsia were the most common causes of maternal mortality in Sleman [4]. Postpartum hemorrhage is defined as the loss of 500ml of blood or more within 24 hours after delivery. Discharge affects maternal morbidity and mortality because excessive blood loss can cause shock and organ dysfunction [5]. Grand multiparity increases the risk of postpartum hemorrhage by sixfold [6]. Postpartum hemorrhage has a 24% increase in 3-5 parity and an 81% rise in 6-or-more equality [7]. Exactly 5.8% of mothers experience postpartum hemorrhage at their first delivery, while 4.5% of females have it in the second birth [8].

## METHOD

The ethics committee has approved the research of Universitas 'Aisyiyah Yogyakarta. This case-control study was conducted in Sleman District Hospital. The inclusion criteria were mothers with vaginal delivery, baby birth weight of 2500 grams - 4000 grams, and gestational age of 37-42 weeks. The exclusion criterion was mothers who experienced antepartum hemorrhage. The total number of childbirths of 2016 – 2017 in Sleman District Hospital was 2,180, with 41 hemorrhage cases. A total of 34 respondents with hemorrhage cases met the inclusion criteria (case group). Two thousand one hundred thirty-nine respondents did not experience illness, 173 fulfilled the inclusion criteria, and 34 were selected randomly for the control group.

## RESULTS AND DISCUSSION

Characteristics of Respondents Table 1 shows that the majority of respondents, 24 respondents, in the case group had 20-35 years old (70.6%), 20 respondents were senior/vocational high school graduates (58.8%), and 19 respondents were homemakers (55.9%). Meanwhile, in the control group, 23 respondents were 20-35 years old (67.6%), 21 respondents had senior high school/vocational school education (61.8%), and 29 respondents were homemakers (85.3%).

Table 1. Distribution of Characteristics of Mothers Giving Birth

Characteristic of Respondent	Case (n=34)	Control (n=34)	N	%		
	f	%	f	%		
<b>Age</b> <20 or >35	10	29.4	11	32.4	21	30.9
20-35 years	24	70.6	23	67.6	47	69.1
<b>Education</b>						
Elementary School	3	8.8	4	11.8	7	10.3
Junior High School	7	20.6	5	14.7	12	17.6
Senior High School	20	58.8	21	61.8	41	60.3
College	4	11.8	4	11.8	8	11.8
<b>Occupation</b>						
Homemaker	19	55.9	29	85.3	48	70.6
Entrepreneur	7	20.6	0	0	7	10.3
Private Employee	6	17.6	3	8.8	9	13.2
Lecturer	1	2.9	0	0	1	1.5
Labor	1	2.9	2	5.9	3	4.4

The secure reproductive age is 20-35 years old because, at the age of <20 years, the reproductive function has not been optimum, while at the age of >35 years, such comorbidities as hypertension and diabetes mellitus can inhibit fetal growth and development due to lack of food supply to the placenta [9]. Age of <20 or >35 years is a risk factor that can cause complications during pregnancy and childbirth, threatening the mother's life. Age of <20 years poses an unstable emotional condition and affects nutrient intake during pregnancy, while >35 years of age is associated with progressive deterioration in the

endometrium that inhibits nutrient supply to the placenta for fetal growth development [10]. The characteristics of educational attainment in this study indicate that most respondents have taken secondary or higher education, which means that the higher the educational attainment, the richer the knowledge that can affect the way of thinking in making rational decisions to keep fit during pregnancy postpartum. Based on occupation characteristics, working mothers can afford prenatal care from medical staff to have early detection of likely complications. They can obtain more information about health from their social relationships in the work environment.

Table 2 Frequency Distribution Based on Parity

No	Parity	Frequency	Percentage (%)
1	With risk (1 or >3)	31	45,6
2	Without risk (2-3)	37	54,4
Total		68	100

Table 2 shows that 31 respondents (45.6%) had parity with risk and 37 respondents (54.4%) had parity

without risk. The study results showed that the percentage of parity without risk was higher than that of parity with risk. Parity of  $\geq 3$  is one factor contributing to postpartum hemorrhage due to weakened uterine contractions caused by overstretched uterine muscles, leading to thinning of the uterine wall [11]. Primiparity (parity of 1) becomes the risk factor for postpartum hemorrhage since the mothers lack information, leading to unpreparedness in dealing with possible complications in pregnancy, childbirth, and postpartum [12].

Table 3. Distribution of Frequency of Postpartum Hemorrhage Incidence

No	Postpartum Hemorrhage	F	(%)
1	Yes	34	50
2	No	34	50
Total		68	100

Table 3 shows that 34 respondents (50%) experienced illness, while 34 respondents (50%) did not.

Table 4. Correlation between Parity and Incidence of Postpartum Hemorrhage

Parity	Postpartum Hemorrhage						P value	OR
	Yes		No		Total			
	f	%	f	%	F	%		
With risk	22	64.7	9	26.5	31	45.6	0.002	5.093
Without risk	12	35.3	25	73.5	37	54.4		
Total	34	100	34	100	68	100		

Table 4 shows that most mothers (22 respondents) having parity with risk (1 or >3) experienced postpartum hemorrhage (64.7%), while those with parity without risk (2-3) mostly did not experience postpartum hemorrhage (25 respondents/73.5%).

Parity of 2-3 is the safest parity for pregnancy. In contrast, primiparity and multiparity (parity of >3) have a higher maternal mortality rate, and the higher the parity, the higher the maternal mortality rate. Multiparity can lead to several problems in mothers, making them unable to perform well as a parent [12]. Postpartum hemorrhage incidence is around 9% in Uganda [13] and approximately 10.9% in Latin America [14]. In Indonesia, maternal mortality due to hemorrhage reaches approximately 20% [15]. The incidence of postpartum hemorrhage affects about 2% of all mothers giving birth. The higher the incidence of postpartum hemorrhage, the higher the maternal morbidity rate is, leading to an increasing maternal mortality rate [16]. Based on the study by Lamina and Ikhile, parity is a risk factor for postpartum hemorrhage. Parity with risk, namely primiparity and grand multiparity, is one of the most common causes of postpartum hemorrhage besides anemia, pregnancy-induced hypertension, and uterine overdistention with Gemelli pregnancy. It also increases postpartum hemorrhage incidence by six times compared to parity without risk [17].

This study is in line with that of Nyfløt et al. (2017), stating that multiparity (>3) causes a twofold increase in the risk of postpartum hemorrhage occurrence (95% CI: 1.39 to 3.22) due to weak uterine contractions with repeated labor. Besides, the results of the research by Nyfløt indicated that 859 women with multiparity and

primiparity experienced severe postpartum hemorrhage with induced labor, causing uterine atony [18]. Weak contractions or uterine atony are caused by the myometrium's failure to have a contraction immediately after delivery, putting the uterus in a state of complete relaxation and making it expand, flaccid, and unable to perform the function of occlusion in the blood vessels causing bleeding. The risk factors for postpartum hemorrhage are parity of 1 due to mothers' unpreparedness to deal with possible complications and parity of >3 due to decreased reproductive function resulting in a greater likelihood of postpartum hemorrhage.

This research also follows the study conducted by finding that multiparity has a threefold hemorrhage risk than other risk factors [19]. This is because of the reduced elasticity of the uterine muscles, which leads to weak uterine contractions during delivery, causing an increase in hemorrhage risk. The awareness of pregnant women to have their pregnancy examined in healthcare centers must be supported by continuous motivation and dissemination to reduce pregnancy incidence beyond the healthy reproductive period and high-risk pregnancy parity of 1 or >3. Therefore, it is necessary to plan pregnancy to prevent likely complications during pregnancy, childbirth, and postpartum through antenatal care (ANC) monitoring, which is expected to reduce postpartum hemorrhage incidence [20].

## CONCLUSION

Parity is a risk factor for the occurrence of postpartum hemorrhage in Sleman District Hospital. Parity with risk (parity of 1 or  $\geq 3$ ) increases the risk of postpartum hemorrhage by fivefold.

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