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Narrow Distance Inter-pregnancies Increase the Incidence of Postpartum Haemorrhage

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Keywords

Distance between pregnancies, Postpartum haemorrhage, Anaemia

Abstract

Background and Aims. Maternal Mortality Rate (MMR) is the parameters of women's health status in community. The single most common cause of maternal mortality is obstetric haemorrhage, generally occurring postpartum. Most postpartum haemorrhage cases are caused by uterus atony, myometrium tonus loss, placenta retention, and clotting disorders. Short pregnancy intervals can cause threefolds of anaemia than normal pregnancy intervals. Pregnant women who suffer from anaemia has the possibility experiencing a postpartum bleeding caused by atonia uteri. This research aims to acknowledge the effect of narrow distance interpregnancy on a postpartum haemorrhage.

Methods. This study uses an observational analytic study with a cross-sectional design. The data used is secondary data of pregnant women based on medical record to calculate the distance of interpregnancy with the incidence of postpartum bleeding during childbirth at Budhi Asih General Hospital of East Jakarta. The inclusion criteria are women who underwent childbirth during 2017-2018, multiparity, and postpartum women between 20-35 years old. The exclusion criteria are women with a history of postpartum haemorrhages caused by placental retention, tear of the reproductive tract or blood

coagulation), gemelli parturition, macrosomia, assisted childbirth, grande multiparity, induction childbirth, and dystocia.

Results. The number of samples used in this study amounted to 111 people. Postpartum haemorrhage are significantly associated with short interpregnancy intervals ($p=0,000$).

Conclusion. Narrower pregnancy interval will leads to postpartum haemorrhage. To prevent this, it is important to consider contraception utilization, to improve iron consumption for pregnant women, and to provide decent antenatal care.

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Introduction

Maternal death is a global change.¹ Maternal Mortality Rate (MMR) is the parameters of women's health status in the community.² Based on recent research, it is estimated that out of 100,000 cases of maternal deaths, 412 of them happened in Ethiopia.³ Based on recent research, it is estimated that out of 100,000 cases of maternal deaths, 412 of them happened in Ethiopia.⁴ According to Indonesian Demographic and Health Survey (IDHS) in 2012, the MMR in Indonesia is still high at 359 maternal death per 100.000 live births.⁵ The single most common cause of maternal mortality is obstetric haemorrhage, generally occurring postpartum.⁶

Postpartum haemorrhage (PPH) still act as the leading cause of maternal deaths worldwide. It is estimated the case has contributed as much as 30% of the total maternal deaths cases or equivalent with 86,000 deaths per year or ten deaths per hour.⁷

Most of postpartum haemorrhage cases are caused by uterus atony, myometrium tonus loss, placenta retention, and clotting disorders.⁸ Risk factors for PPH include past history of PPH, multiple pregnancies, fetal macrosomia, primigravida, grand multi-parity, older age which the uterine atony is responsible for the majority (75 %) of PPH.⁹

Postpartum haemorrhage is a case of at least 500 cc of post-natal vaginal birth blood loss or 1000 cc of caesarean section birth blood loss.¹⁰ Blood loss exceeds 1,000 ml following a vaginal delivery or results in signs or symptoms of circulating blood volume instability are defined as postpartum haemorrhage.¹¹

Severe complications following HPP are hemorrhagic shock, acute respiratory distress syndrome, disseminated intravascular coagulation, acute renal failure, loss of fertility, pituitary necrosis (Sheehan syndrome), and even maternal death. Most deaths resulting from severe PPH occur during the first 24 hours after birth.¹² The direct causes of Indonesian maternal deaths are haemorrhage (30.3%), hypertension eclampsia (27.1%), and infection (7.3%).¹³

Interpregnancy care is a type of intervention that aims to improve mother and newborn outcomes. Improving maternal health before a future pregnancy can be an efforts to reduce maternal morbidities.⁷ Optimal pregnancy intervals make the health of mother and babies optimal, while non-optimal pregnancy interval are associated with higher maternal morbidities and mortality.¹⁴ Short pregnancy intervals can cause threefolds of anaemia than normal pregnancy intervals.¹⁵ Females with shorter pregnancy interval will be exposed to uterus rupture, placenta previa, antenatal and prenatal infection risks,¹⁶ also postpartum haemorrhage. World Health Organization (WHO) suggests that pregnancy intervals should at least come with a gap of 33 months to achieve the best maternal and neonatal outcomes. Females with longer pregnancy interval have better maternal deaths and neonatal cases rates, for example older ages, higher education level, and better antenatal care and supplements.¹⁷

The significant cause of maternal complication clinically remains to postpartum haemorrhage, therefore, it is important to identify the patient who has the risk for postpartum haemorrhage.¹⁸ Reducing maternal and neonatal mortality rates

is one of the keys of sustainable development goals (SDGs), which aim to reduce global maternal mortality ratio (MMR) to 70 for every 100,000 birth and reduce neonatal mortality to 12 for every 1,000 births in 2030.¹⁹

Based on a research conducted by Went, pregnancy interval of less than 12 months will increase the risk of haemorrhage, neonatal and maternal mortality.²⁰ However, based on a research conducted by Mignini, there is no significant relationship between pregnancy interval and maternal deaths.²¹ Based on that, there are still contradictive statements regarding pregnancy interval and postpartum haemorrhage as the leading cause of maternal deaths. The objective of this research is to acknowledge the relationship between pregnancy interval and postpartum haemorrhage.

Methods

First, this research design is an observational analytic survey research using a cross-sectional design, conducted on September-October 2018. The sampling was based on secondary data. This study was carried out at Budhi Asih General Hospital. HPP defines as a haemorrhage at least 500 ccs of post-natal vaginal birth blood loss or 1000 cc of caesarean section birth blood loss. Pregnancy interval divided by high and low risk. High risk if interpregnancy interval less than two years dan low risk if more than two years. The inclusion criteria are mothers who underwent childbirth during 2017-2018, multigravida mothers, and postpartum mothers between 20-35 years old. The exclusion criteria are mothers that previously suffered from postpartum haemorrhage, placenta retention postpartum haemorrhage, blood coagulation postpartum haemorrhage, gemelli parturition with macrosomia, assisted childbirth, grand multipara mothers, postpartum by birth canal tearing, anaemia, induction childbirth, and old parturition.

In this study, researchers used consecutive non-random sampling, in which the selected samples were all observed subjects who met the sample selection criteria. Whoever met the criteria will be included in the sample until the required sample size is met. The minimum sample according to sample calculation is at 111 subjects. Data analysis was conducted by utilizing univariate and bivariate analyses with Fisher statistical test on 95% significance. The research ethics permit was granted by Ethical Committee of Trisakti University Faculty of Medicine. The Ethical number: 121/KER-FK/VIII/2018.

Results

Research data were obtained from secondary data in the form of medical records of mothers who underwent childbirth in Budhi Asih General Hospital, East Jakarta, from November 2017 to April 2018. The included data in this research consist of 111 medical records. The number of mothers who underwent childbirth at the age range of 20-24 years old is 12 mothers (10.8%), 25-29 years old is 54 mothers (48.6%), and 30-34 years old is 45 (Table 1).

Based on pregnancy interval, we discover that 23 subjects (20.7%) are included as mothers with high risk pregnancy interval which is at < 2 years old, and 88 subjects (79.3%) are included as mothers with low risk pregnancy interval with > 2 years between each pregnancy (Table 2).

Based on postpartum haemorrhage cases, there are 22 subjects (19.8%) that suffer from postpartum haemorrhage, and 89 subjects (80.2%) without postpartum haemorrhage incident (Table 3).

The number of subjects that suffer from postpartum haemorrhage based on their age range is categorized into 3 groups. In the category of 20-24 years of age, we discovered 3 subjects with postpartum haemorrhage cases and 9 subjects without postpartum haemorrhage cases. On the category of 25-29 years of age, we discovered 13 subjects with postpartum haemorrhage and 41 subjects without postpartum haemorrhage cases. Meanwhile, on the category of 25-29 years of age, we discovered 6 subjects with postpartum haemorrhage and 39 subjects without postpartum haemorrhage cases (Table 4).

To acknowledge the relationship between age and postpartum haemorrhage, we performed the chi-square statistical test and obtained a p-value of 0.366 which is higher than 0.05. Based on that, we can state that H0 is accepted and concluded that there is no significant relationship between age and postpartum haemorrhage.

Table 4 shows that the distribution of postpartum haemorrhage by pregnancy interval is categorized into two groups. The high-risk pregnancy interval is postpartum haemorrhage pregnancy with 13 subjects and non-postpartum haemorrhage pregnancy with 10 subjects. Mothers categorized with low risk of postpartum haemorrhage pregnancy interval are at 9 subjects and mothers without postpartum haemorrhage are at 79 subjects.

We utilized the Chi-Square statistical test to acknowledge the relationship between pregnancy interval and postpartum haemorrhage. However, since this test could not fulfil the intended criteria due to 20% of the subjects with an expected value < 5, we utilized Fisher statistical test that produced p-value of 0.000. Because this result is ≤ 0.05 we refused H0 and accepted is H1. Based on that, we conclude a significant relationship between pregnancy interval and PPH.

Table 1. Maternity Subjects Characteristic Distribution

Age	Frequency (n)	Percentage (%)
20-24	12	10.8
25-29	54	48.6
30-34	45	40.5
Total	111	100

Table 2. Subjects with Low and High Risks of Pregnancy Interval (n = 111)

Pregnancy Risk	Frequency (n)	Percentage (%)
High	23	20.7
Low	88	79.3
Total	111	100

Discussion

Based on age characteristics, most of the females who underwent childbirth at Budhi Asih General Hospital are between 25-29 years old. Based on their pregnancy interval, most of the females who underwent childbirth in Budhi Asih General Hospital are inside the low-risk pregnancy interval or > 2 years on each pregnancy at 88 subjects, and high-risk pregnancy intervals or < 2 years of each pregnancy at 23 subjects. Of the 23 subjects with high-risk pregnancy interval, 22 experienced postpartum haemorrhage. Based on the results, we conclude that there is a significant relationship between pregnancy interval and PPH.

Our result is in line with the study conducted by Buntoro and Leah.^{2,14} A study Lill conducted that mothers with previous obstetric labour and postpartum period were 3.03 times more likely to experience PPH.²²

Women with longer pregnancy interval will have adequate time to recover from their previous pregnancy, and have proper economic, cultural, physical, and psychological preparations for another pregnancy, which leads to low risk of haemorrhage.²³ Pregnancy interval is important to protect mothers and to improve the quality of their subsequent pregnancy.²⁴ A shorter pregnancy period is a challenge for females in developed countries, leading to high risks of maternal deaths.²⁵

The normal pregnancy interval between pregnancies based on the conception of current pregnancy is at 18-30 weeks. The solution to prevent this is utilizing the contraception method.²⁶ Postpartum haemorrhage is caused by endometrium venal remodelling disorder after childbirth. A shorter pregnancy interval is also risky due to inadequate time for the reproduction organ to have a decent resting period before the next pregnancy.⁶ Another case that leads to postpartum haemorrhage besides shorter pregnancy period is the absence of contraception options after birth.²⁷ Women with a history of severe PPH had a nine-fold increased likelihood of severe PPH in their pregnancy index.²²

The etiology of PPH is divided into one or more of four basic disorders. The "4 Ts" aetiology of PPH is uterine tone, trauma, tissue, and thrombin. The most prevalent cause of PPH is atonic uterine hemorrhage.

Table 3. Number of Cases with and Without Postpartum Haemorrhage Cases (n = 111)

Post Partum Haemorrhage	Frequency (n)	Percentage (%)
Yes	22	19.8
No	89	80.2
Total	111	100

Table 3. Number of Cases with and Without Postpartum Haemorrhage Cases (n = 111)

Variables (n=111)	Post Partum Haemorrhage			P Value
	Yes	No	Total	
Age Categories				
20-24	3 (25%)	9 (75%)	12	0.366*
25-29	13 (24.1%)	41 (75.9%)	54	
30-34	6 (13.3%)	39 (86.7%)	45	
Pregnancy Interval				
High Risk	13 (56.5%)	10 (43.5%)	23	0.000 \square
Low Risk	9 (10.2%)	79 (89,8%)	88	

According to the findings of Bassey's study, the complications of interpregnancy interval showed a considerable rise in maternal and newborn complications as compared to normal interpregnancy interval. With the attendant burden on the family, health care providers and the society at large. This study demonstrated that maternal anaemia, uterine rupture and abruptio placentae were significantly associated with interpregnancy interval.²⁸ The incidence of preterm, anaemia, intra uterine growth restriction, low birth of baby weight and neonatal intensive care unit admission whereas longer, is related to pregnancy intervals shorter than 18 months.²⁹

Baylannah show relationship inter pregnancy interval are causally related to primary PPH. Spacing pregnancy at minimum of 18 months can reduce PPH risk in more than half of cases. Increased utilization of maternal health service will impact decreasing primary PPH, because the risk factors are related and controllable health service.³⁰ The fast onset and progressivity of PPH show demand for high-quality services to prevent PPH-related mortality and morbidity.³¹

Despite efforts to increase mother outcomes, management of postpartum haemorrhage is still challenging.³² A study done by Leah noted that interpregnancy intervals are shorter in younger women (< 20years) than those over twenty years old and shorter in higher orders births than lower orders. births. The analysis recommends that women with long intervals between pregnancies have a lower risk of PPH.¹⁴

WHO recommends minimum pregnancy interval of at least 24 months betweenlive birth and subsequent pregnancies; meanwhile, other studies suggest that an interval between pregnancies of 3 to 5 years further reduces the risk of adverse pregnancies.¹⁴ It is important to consider contraception as prevention for achieving this goal, and longer pregnancy interval, so that mothers will achieve better antenatal care.^{33,34} On the importance of pregnancy interval and adverse maternal outcomes can help provide important information to help design evidence-based interventions to reduce their impact, and accelerate the achievement of SDG3 by 2030.¹⁴

Conclusion

Narrower pregnancy interval will leads to postpartum haemorrhage. To prevent this, it is important to consider contraception utilization, to improve iron consumption for pregnant women, and to provide decent antenatal care.

We encourage researchers to conduct similar research with larger samples, especially on developed countries.

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