



The Relationship Between Pregnancy Distance And the Incidence of Premature Rupture of Membranes in Mothers Giving Birth at Ratu Zalecha Hospital

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Abstract

Premature rupture of membranes (PROM) is the rupture of the amniotic membranes before delivery or when the cervix is less than 3 cm dilated, and in multiparas, less than 5 cm dilated. According to the World Health Organization (WHO), the incidence of premature rupture of membranes or PROM ranges from 5 to 10% of all births. Preterm PROM occurs in 1% of all pregnancies and 70% of PROM cases occur in term pregnancies. In 30% of cases, PROM can cause infection. The incidence of KPD at Ratu Zalecha Hospital was 137 cases out of a total of 623 women giving birth and was ranked first among pathological birth cases. Meanwhile, the results of a preliminary study conducted by researchers showed that there were 309 cases of KPD from January to October 2023, 10 cases of postpartum hemorrhage, and 210 cases of preeclampsia. To understand the relationship between the interpregnancy interval and the occurrence of premature rupture of membranes in delivering mothers at Ratu Zalecha Martapura Regional General Hospital. This study is a quantitative analysis with a

cross-sectional approach. The sampling technique employed is total sampling, with a sample size of 309 postpartum mothers. The analysis utilizes the chi-square test formula or Fisher's exact test if the expected value is ≤ 5 . There were 248 respondents (80.3%) who had a history of a pregnancy interval of ≥ 2 years in their previous pregnancy, 171 respondents (55.3%) had not experienced premature rupture of membranes in their previous birth history. The chi-square test result showed a p-value of 0.026 (<0.05), indicating rejection of the null hypothesis (H_0). There is a relationship between pregnancy distance and the incidence of premature rupture of membranes at Ratu Zalecha Hospital, Martapura.

Keywords

Pregnancy Distance, Premature Rupture of Membranes, Maternal

Introduction

Pregnancy distance is the interval between two consecutive pregnancies in a woman. After giving birth, a woman needs 2 to 3 years to recover her body and prepare for the next pregnancy and delivery. In Indonesia, mothers who are at high risk for pregnancy and childbirth

complications and causes of death due to pregnancy spacing that is too close (less than 2 years) reach 15.4% (Maulida et al., 2021)

High-risk pregnancies include those with pregnancies too close together (less than 2 years apart). A woman needs 2 to 3 years after giving birth to recover her body and prepare for the next pregnancy and childbirth. Short pregnancy intervals directly affect women's health. Close pregnancy intervals increase the risk of bleeding in the third trimester. (Handayani et al., 2023)

Premature rupture of membranes (PROM) is defined as the rupture of the amniotic sac before labor or before cervical dilation of less than 3 cm in nulliparous women and less than 5 cm in multiparous women. This can occur in term pregnancies or in preterm pregnancies. In this condition, the risk of infection for the mother and child increases. Premature rupture of membranes is an important obstetric issue that can also cause infection in the mother and baby, as well as increase pain and mortality in the mother and baby (Rohmawati & Fibriana, 2018)

The incidence of PPRM in Indonesia ranges from 4.5% to 6% of all pregnancies, while in some hospitals in Indonesia it varies considerably: Sardjito Hospital 5.3%, Hasan Sadikin Hospital 5.05%, Cipto Mangunkusumo Hospital 11.22%, and Kariadi Hospital 5.10%. (Rohmawati & Fibriana, 2018)

A higher number of complications are seen if the interval between deliveries accompanied by KPD is prolonged and if premature rupture of membranes occurs far from term. Risk factors need to be identified to aid in the antenatal diagnosis of KPD, as KPD is associated with pregnancies that are too close together. A woman should be educated about the possibility of KPD by explaining the risk factors and the need for early reporting. KPD risk factors are closely related to the mother's demographic and obstetric status, including parity, maternal age, and too-close pregnancy intervals (Fatimah et al., 2023)

Methods

The research method used in this study was quantitative analysis with a cross-sectional approach, using total sampling as the sampling technique, with a sample size of 309 mothers who had given birth. This study used the chi-square test or Fisher's exact test if the expected value was <5.

The data collection instrument used in this study was a checklist. Data were collected from medical records at the Ratu Zalecha Martapura Regional General Hospital. The data collected included secondary data on mothers who experienced premature rupture of membranes (PROM) at the Ratu Zalecha Martapura Regional General Hospital in 2023. In conducting data analysis, the data must first be processed to convert it into information.

Results and Discussions

Univariate Analysis

Table 1. Based on Gestational Age

Gestational Age	Frequency	Percentage
<2 Years	61	19.7
≥2 Years	248	80.3

Total	309	100
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Table 2. Based on Premature Rupture of Membranes

PPR	Frequency	Percentage
Yes	138	44.7
No	171	55.3

Bivariate Analysis

Table 3. Pregnancy interval and premature rupture of membranes

Interpregnancy Interval	Premature Rupture of Membranes		Total		<i>P value</i>		
	Yes	No	n	%			
	n	%	n	%	n	%	
<2 Years	35	11.3	26	8.4	61	19.7	0.026
≥2 years	103	33.3	145	47	248	80.3	
Total	138	44.7	171	55.3	309	100	

Discussion

Univariate Analysis

Premature rupture of membranes (PROM) at Ratu Zalecha Martapura Regional General Hospital in this study was divided into two groups: those who experienced PROM in their previous delivery and those who did not. Most respondents had not experienced PPROM in their previous delivery history, totaling 171 respondents (55.3%), while the remaining respondents had experienced PPROM in their previous delivery, totaling 138 respondents (44.7%). Premature rupture of membranes is often caused by weakening of the membranes or increased pressure in the uterus, or both. However, according to Taufan (2012) in (Sari & Munir, 2020), the exact cause of PROM is still unknown and difficult to determine with certainty. Several reports have linked PPROM to factors such as infection of the amniotic membranes, cervical incompetence, high intrauterine pressure, abnormal fetal position, socioeconomic conditions, and other factors including blood type, disproportion, multiple pregnancies, previous history of PPROM, and multiple pregnancies. (Fatimah et al., 2023)

The majority of respondents had a pregnancy interval of ≥2 years (248 respondents, 80.3%), while the remainder had a pregnancy interval of <2 years (61 respondents, 19.7%). The results of this study are in line with Saida, 2023 which shows that based on the results of the study, it was found that of the 56 samples of pregnant women who did not experience premature rupture of membranes, 46 (51.1%) mothers had a high risk, and of the 36 pregnant women who experienced premature rupture of membranes, 44 (48.9%) were pregnant women with a low risk. Statistical test results showed that there was a relationship between pregnancy spacing and the occurrence of premature rupture of membranes with a p-value of 0.001.

Pregnancy spacing is a consideration in determining the first pregnancy with subsequent

pregnancies. Pregnancy spacing that is too close, i.e., less than 24 months, increases the risk during childbirth. Women who give birth to children with a very close interval, less than two years, experience an increased risk of bleeding in the third trimester. This can be caused by placenta previa, anemia, premature rupture of membranes, postpartum endometriosis, and in the worst cases, death during childbirth (Saida, 2023)

According to Sari & Munir, (2020) indicate that a pregnancy interval of less than two years has the potential to cause suboptimal fetal growth, longer labor, and an increased risk of bleeding during childbirth because the uterus has not fully recovered. Mothers who give birth with a short pregnancy interval, especially less than two years, have a higher risk of bleeding in the third trimester, which can be triggered by factors such as placenta previa, anemia, and premature rupture of membranes. In addition, there is a possibility that the baby will be born with low birth weight in this condition. The results of this study show that a pregnancy interval of <2 years has a high risk of premature rupture of membranes compared to a pregnancy interval of ≥ 2 years. This is because the mother's uterus has not fully recovered to a normal state, which can lead to suboptimal fetal growth in the womb.

Bivariate Analysis.

The results of the study show a correlation with the incidence of premature rupture of membranes at Ratu Zalecha Martapura Regional General Hospital. Among respondents with a pregnancy interval of <2 years, more experienced premature rupture of membranes (PROM) at 35 people (11.3%), while the remaining 26 respondents (8.4%) did not experience PROM in their previous delivery history. Conversely, among those with a pregnancy interval of ≥ 2 years, more did not experience premature rupture of membranes in their previous delivery history, totaling 145 (7%), while the remaining 103 respondents (33.3%) experienced PROM. The *chi-square* test results showed a *p-value* of 0.026 (<0.05), so H_0 was rejected, and it can be concluded that there is a relationship between pregnancy interval and premature rupture of membranes at Ratu Zalecha Martapura Regional General Hospital.

The results of this study are in line with Sari & Munir (2020) which shows that the *chi-square* statistical test results for the pregnancy interval of mothers giving birth with a *p-value* of 0.003 < $\alpha = 0.05$, it can be concluded that there is a significant relationship between pregnancy interval and premature rupture of membranes. The OR value of 8.582 indicates that a pregnancy interval of >2 years has an 8.582 times higher chance of not experiencing premature rupture of membranes compared to a pregnancy interval of <2 years. Mothers who have just given birth need about 2 to 3 years to recover physiologically from pregnancy and childbirth. This is very important in order to prepare for the next pregnancy. The shorter the interval between births, the higher the risk of giving birth to a low birth weight (LBW) baby. This risk is caused by complications such as bleeding during pregnancy and childbirth, premature birth, and severe anemia. Although birth spacing carries risks, these risks can be managed and prevented through regular monitoring of health and pregnancy development.

According to research Sari & Munir (2020) Mothers with pregnancies that are too close together (<2 years) have a higher risk of experiencing KPD. This is because pregnancies that are too close together, i.e., less than 2 years apart, pose a high risk during the delivery process. Women who have children with a very short interval, less than two years, have a higher risk of

complications such as third-trimester bleeding, which can be caused by various factors including placenta previa, anemia, premature rupture of membranes, postpartum endometriosis, and even the risk of death during childbirth. Therefore, proper pregnancy spacing planning is crucial to prevent these occurrences, including the use of contraception after the last delivery.

Conclusion

This study concludes that there is a significant relationship between the interpregnancy interval and the incidence of premature rupture of membranes (PROM) among mothers giving birth at Ratu Zalecha Regional General Hospital, Martapura. Mothers with pregnancy intervals of less than two years showed a higher incidence of PROM compared to those with intervals of two years or more. A shorter pregnancy interval increases the risk of complications such as third-trimester bleeding, placenta previa, anemia, postpartum endometriosis, and premature birth. These complications arise because the uterus and maternal physiological systems may not have fully recovered from the previous pregnancy, leading to suboptimal fetal growth and increased vulnerability to PROM. The findings emphasize the importance of appropriate pregnancy spacing (2–3 years) to allow adequate maternal recovery and reduce risks associated with premature rupture of membranes. Strengthening health education, promoting family planning, and regular antenatal monitoring are essential strategies to minimize PROM cases and improve maternal and neonatal outcomes.

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