FACTORS INFLUENCING THE INCIDENCE OF PREMATURE RUPTURE OF MEMBRANES IN PONED, SITANGGAL COMMUNITY HEALTH CENTER, BREBES IN 2023

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Article Info	ABSTRACT

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Premature rupture of membranes is one of the most common complications of pregnancy. This study aims to determine the factors that influence the incidence of premature rupture of membranes in Poned Puskesmas Sitangan Brebes district in 2023. This study was conducted with a case control design with a retrospective method. The population in this study was 89 people. The sample of the study was 47 people taken with the Slovin formula technique. Data collection with data collection formats taken from patient medical records at Poned Puskesmas Sitangan Brebes district in 2023. Research analysis was carried out with univariate and bivariate analysis. The results of the study with the chi-square test showed that the age factor (p =0.002), parity (p =0.01) had a relationship with premature rupture of membranes, and the malpresentation factor had no relationship with premature rupture of membranes (p =0.555). Based on the results of this study, it was found that the factors of maternal age, parity were associated with the incidence of premature rupture of membranes in Poned Puskesmas Sitangan Brebes in 2023.

1. INTRODUCTION

The success of health services in a country can be measured through the Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR). The Maternal Mortality Rate (MMR) in the world is still high with a total of 289,000 people. Several developing countries have quite high MMR such as in Sub-Saharan Africa as many as 179,000 people, South Asia as many as 69,000 people, and in Southeast Asia as many as 16,000 people. MMR in Southeast Asian countries, one of which is in Indonesia, is 190 per 100,000 live births (WHO, 2017).

The direct causes of maternal death in Central Java Province in 2021 were metabolic disorders 0.6%, bleeding system disorders 4.4%, infections 1.7%, hypertension in pregnancy 16%, bleeding 10.7%, and others 11.5% and mothers infected with *Covid-19* 55.2%. Of these causes of death, infections still dominate so that the incidence of premature rupture of membranes still occurs (Dinkes, 2021).

Infection is one of the causes of maternal death. Infection can occur during pregnancy, childbirth, and postpartum. One of the causes of infection is premature rupture of membranes. Around (25%) of intrauterine infections are caused by premature rupture of membranes that take a long time to be treated by health workers. The longer the interval between rupture of membranes and delivery, the higher the risk of morbidity and mortality for the mother and fetus (Isnaini, 2015).

Premature rupture of membranes (PROM) is one of the most common pregnancy complications. The incidence of premature rupture of membranes is (2.7 % - 17%), depending on the length of the latent phase period used to establish the diagnosis of PROM. The incidence of PROM cases is higher in women with incompetent cervix, polyhydramnios, fetal malpresentation, twin pregnancy or infection of the cervix or vagina (Sudarmi, 2013)

Premature rupture of membranes (PROM) or premature rupture *of the membranes (PROM) is often referred to as premature* rupture of the membranes (PROM) is defined as rupture of the amniotic membranes before the time of delivery. Rupture of the membranes before delivery or opening in primiparas is less than 3 cm and in multiparas less than 5 cm. This can occur in term pregnancies or preterm pregnancies. In this condition, the risk of infection of the mother and child increases. Premature rupture of membranes is an important problem in obstetrics which can also cause infection in the mother and baby and can increase morbidity and mortality in the mother and baby (Purwaningtyas, 2017)

The most common impact of PROM before 37 weeks of gestation is respiratory distress syndrome (RDS *)* , which occurs in 10-40% of newborns. The risk of infection will increase prematurity, asphyxia, and hypoxia, prolapse (umbilical cord prolapse), risk of disability, and fetal lung hypoplasia at term. Almost all PROM in preterm pregnancies will be born before term or delivery will occur within one week after rupture of the membranes. Approximately 85% of perinatal morbidity and mortality are caused by prematurity due to premature rupture of membranes.

According to WHO, the incidence of premature rupture of membranes (PROM) or PROM (*prelobour rupture of membrane*) is around 5-10% 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 is the cause of premature birth (WHO, 2014)

The cause of premature rupture of membranes is not yet known for certain, but the possible predisposing factors are infections that occur directly in the amniotic membrane or ascending from the vagina or cervix. In addition, abnormal amniotic membrane physiology, incompetent cervix, abnormal fetal position, women's age less than 20 years and over 35 years, blood type factors, multigravidity/parity factors, smoking, socioeconomic conditions, antepartum bleeding, history of abortion and previous preterm labor, history of previous KPD, nutritional deficiencies, excessive uterine tension, pelvic narrowing, maternal fatigue at work, and trauma such as sexual intercourse, internal examination (Tahir, 2012).

The results of Syukrianti Syahda's (2015) research entitled factors related to premature rupture of membranes (PROM) in mothers giving birth in the Camar II room of Arifin Achmad Hospital in 2015. There is a relationship between age and the occurrence of premature rupture of membranes, there is a relationship between parity and the occurrence of premature rupture of membranes, there is a relationship between gamelli and the occurrence of premature rupture of membranes, there is a relationship between malpresentation and the occurrence of premature rupture of membranes, and there is a relationship between preeclampsia and the occurrence of premature rupture of membranes.

Based on a preliminary study using secondary data from the medical records of the Poned Sitanggal Brebes Health Center, 53 cases (12.1 %) of Premature Rupture of Membranes, Severe Preeclampsia (10.5 %), Serotinus (4.1%), History of CS (5.5%), Normal delivery (37.7%) and other conditions (30.1) were obtained from 438 patients in 2023.

Based on the background above, the researcher is interested in conducting research on the factors that influence the incidence of Premature Rupture of Membranes with the aim of determining the factors that influence the incidence of premature rupture of membranes at Poned Sitanggal Health Center, Brebes Regency in 2023.

2. METHOD

The design of this study is a *case control design* with a retrospective method, namely looking at the factors that influence the incidence of premature rupture of membranes at Poned Sitanggal Brebes Health Center in 2023. The data taken is secondary data from medical records and the Poned room register book for the 2023 period at the Sitanggal Brebes Health Center.

The population in this study was all mothers giving birth at Poned Sitanggal Brebes Health Center in 2023, totaling 89 patients. The sample size was determined using the Slovin formula and obtained 47 patients.

In this study, the independent variables are Age , Parity and Malpresentation, while the dependent variable is the Incidence of Premature Rupture of Membranes.

The data of this study are secondary data taken using medical records of maternal patients who gave birth at the Poned Sitanggal Brebes Health Center in 2023. The flow of collecting patient medical record data (secondary data) includes requesting permission to conduct research at the Sitanggal Brebes Health Center. Next, explain the purpose and objectives of the research, and finally record the measurement results on the research sheet form.

This research has obtained ethical approval from the Health Research Ethics Commission of Kusuma Husada University Surakarta with ethical approval number 2316/UKH.L.02/EC/VIII/2024.

3. RESULTS

3.1 Univariate Analysis

Univariate analysis in this study was used to see the frequency distribution of the dependent variable (Premature Rupture of Membranes) and independent variables (Maternal Age , Parity and Malpresentation).

Table 4.1 Distribution of Frequency of Premature Rupture of Membranes in Mothers Giving Birth at the Poned Sitanggal Brebes Health Center 2023

Category	Frequency	Percentage (%)
Not Experiencing KPD	15	32
Experiencing KPD	32	68
Total	**47**	**100**

Based on the data in table 4.1, it can be seen that the distribution of premature rupture of membranes in mothers giving birth at the Poned Sitanggal Brebes Health Center in 2023 was 47 people. A total of 32 people (68%) experienced premature rupture of membranes and 15 people (32%) did not experience premature rupture of membranes.

Table 4.2 Frequency Distribution of Age of Mothers Giving Birth at Poned Sitanggal Brebes Health Center 2023

Category	Frequency	Percentage (%)
Reproductive age at risk	25	53
Healthy Reproductive Age	22	47
Total	**47**	**100**

Based on the data in table 4.2, it can be seen that the age distribution of mothers giving birth at the Poned Sitanggal Brebes Health Center in 2023 was 22 people (47%) included in the healthy reproductive age, and 25 people (53%) included in the reproductive age at risk.

Table 4.3 Frequency Distribution of Parity in Mothers Giving Birth at Poned Sitanggal Brebes Health Center 2023

Category	Frequency	Percentage (%)

Primipara	1 6	34
Multipara/Grandemultipara	3 1	6 6
Total	**47**	**100**

Based on the data in table 4.3, it can be seen that the distribution of parity in mothers giving birth at the Poned Sitanggal Brebes Health Center in 2023 was 31 people (66%) included in the multipara / grande multipara category, and 16 people (34%) included in the Primipara category.

Table 4.4 Frequency Distribution of Malpresentation in Mothers Giving Birth at Poned Sitanggal Brebes Health Center 2023

Category	Frequency	Percentage (%)
Normal	3 1	6 6
Breech / Transverse	16	3 4
Total	**47**	**100**

Based on the data in table 4.4, it can be seen that the distribution of Malpresentation in mothers giving birth at the Poned Sitanggal Brebes Health Center in 2023 was 31 people (66%) included in the Normal category, and 16 people (34%) included in the Breech/transverse category.

3.2 Bivariate Analysis

Bivariate analysis was conducted to determine factors associated with premature rupture of membranes in the Poned room of Sitanggal Brebes Health Center in 2023 using Chi Square statistical analysis. Can be seen in the table below.

Table 4.5 Cross Tabulation of Premature Rupture of Membranes and Age in Mothers Giving Birth at Poned Sitanggal Brebes Health Center 2023

Premature Rupture of Membranes (PROM)	Age				Total	*p*
	Reproduction at risk	%	Healthy Reproduction	%		
Not experiencing KPD	3	6	12	26	1 5	0.002
Experiencing KPD	22	47	1 0	21	32	
Total	**25**	**53**	**2 2**	**47**	**47**	

Based on the cross-tabulation results in table 4.5, it can be seen that of the 47 mothers giving birth at the Poned Sitanggal Brebes Health Center in 2023, there were 10 (21%) mothers who gave birth who experienced premature rupture of membranes with a healthy reproductive age, and as many as 22 (47%) mothers who gave birth who experienced premature rupture of membranes with a reproductive age at risk.

Table 4.6 Results of *Chi Square Test Analysis* of Premature Rupture of Membranes and Age in Mothers Giving Birth at Poned Sitanggal Brebes Health Center 2023

Variables	*p value*	Pearson chi square	N
Age	0.002	9,748	47

Chi Square Test Analysis in table 4.6 show that the age variable obtained *a p-value* of 0.002, where this result is smaller than the provision of *p-value* <0.05, so it can be concluded that there is a

relationship between age and premature rupture of membranes in mothers giving birth at the Poned Sitanggal Brebes Health Center in 2023.

Table 4.7 Cross Tabulation of Premature Rupture of Membranes and Parity in Mothers Giving Birth at Poned Sitanggal Brebes Health Center 2023

Premature Rupture of Membranes (PROM)	Parity			%	Total	*p*
	Primipara	%	Multipara/Gran dimultipara			
Not experiencing KPD	9	19	6	13	1 5	0.01
Experiencing KPD	7	15	2 5	53	32	
Total	**1 6**	**34**	**31**	**66**	**47**	

Based on the cross-tabulation results in table 4.7, it can be seen that of the 47 mothers who gave birth at the Poned Sitanggal Brebes Health Center in 2023, there were 25 (53%) mothers who gave birth to babies 5 times or more, either alive or dead, with premature rupture of membranes. Meanwhile, 7 (15%) mothers gave birth to live babies for the first time with premature rupture of membranes.

Table 4.8 Results of *Chi Square Test Analysis* of Premature Rupture of Membranes and Parity in Mothers Giving Birth at Poned Sitanggal Brebes Health Center 2023

Variables	*p value*	Pearson chi square	N
Parity	0.01	6,611	47

the Chi Square Test Analysis in table 4.8 show that the age variable obtained *a p-value* of 0.01, where this result is smaller than the provision of *p-value* <0.05, so it can be concluded that there is a relationship between parity and premature rupture of membranes in mothers giving birth at the Poned Sitanggal Brebes Health Center in 2023.

Table 4.9 Cross Tabulation of Premature Rupture of Membranes and Malpresentation in Mothers Giving Birth at the Poned Sitanggal Brebes Health Center 2023

Premature Rupture of Membranes (PROM)	Malrepresentation			%	Total	*p*
	Normal	%	Breech/ Transverse			
Not experiencing KPD	9	19	6	13	1 5	0.555
Experiencing KPD	22	47	10	21	32	
Total	**1 6**	**66**	**31**	**34**	**47**	

Based on the results of the cross tabulation in table 4.9, it can be seen that out of 47 mothers giving birth at the Poned Sitanggal Brebes Health Center in 2023, there were 9 (19%) mothers who gave birth to babies in a normal baby position without experiencing premature rupture of membranes. Meanwhile, 6 (13%) mothers gave birth to babies in a breech or transverse position without experiencing premature rupture of membranes. Furthermore, there were 22 (47%) mothers who gave birth to babies in a normal baby position with premature rupture of membranes. Then there were 10 (21%) mothers who gave birth to babies in a breech or transverse position with the condition of premature rupture of membranes.

***Chi Square* Test Analysis of Premature Rupture of Membranes and Malpresentation in Mothers Giving Birth at Poned Sitanggal Health Center Brebes 2023**

Variables	*p value*	Pearson chi square	N
Parity	0.555	0.348	47

Chi Square Test Analysis in table 5.0 show that the age variable obtained *a p-value* of 0.555, where this result is greater than the provision of *p-value* <0.05, so it can be concluded that there is no relationship between malpresentation and premature rupture of membranes in mothers giving birth at the Poned Sitanggal Brebes Health Center in 2023.

4. DISCUSSION

Based on the results of this study, it shows that most respondents who are in healthy reproductive age (20-35 years) as many as 10 respondents (21%) experienced premature rupture of membranes. Furthermore, some respondents in reproductive age at risk (< 20 years and or > 35 years) as many as 22 respondents (47%) also experienced premature rupture of membranes.

Based on the results of this study, it shows that most respondents who are in healthy reproductive age (20-35 years) as many as 10 respondents (21%) experienced premature rupture of membranes. Furthermore, some respondents in reproductive age at risk (< 20 years and or > 35 years) as many as 22 respondents (47%) also experienced premature rupture of membranes.

The results of the study showed that mothers who experienced premature rupture of membranes gave birth in a normal baby position (normal malpresentation) as many as 22 respondents (47%). In contrast, mothers who experienced premature rupture of membranes gave birth in a breech or transverse baby position (breech/transverse malpresentation) as many as 10 respondents (21%). So based on the *chi-square test* , it shows that with *a p-value of* 0.555 (<0.05) there is no relationship between malpresentation and premature rupture of membranes in mothers giving birth at Poned Puskesmas Sitanggal Brebes 2023.

5. CONCLUSION

Based on the results of the study conducted on mothers giving birth at the Poned Sitanggal Brebes Health Center in 2023, the following conclusions were obtained regarding "Factors Influencing the Incidence of Premature Rupture of Membranes at the Poned Sitanggal Brebes Health Center in 2023":

1. , factors that were associated with premature rupture of membranes were found, namely age and parity, which had a *p-value* < 0.05 .
2. There was no significant relationship between malpresentation and the incidence of premature rupture of membranes at the Poned Sitanggal Brebes Health Center.
3. In 2023, 32 women (68%) experienced premature rupture of membranes in childbirth at the Poned Sitanggal Brebes Health Center and 15 women (32%) did not experience premature rupture of membranes.

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