Indonesian Journal of Global Health Research
Volume 7 Number 1, February 2025
e-ISSN 2715-1972; p-ISSN 2714-9749
http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

FACTORS ASSOCIATED WITH THE INCIDENCE OF PREMATURE RUPTURE OF MEMBRANES

Shofia Nur Lathifa, Faizah Betty Rahayuningsih*
School of Nursing, Universitas Muhammadiyah Surakarta, Jl. A. Yani, Mendungan, Pabelan, Kartasura, Sukoharjo, Central Java 57162, Indonesia
*fbr200@ums.ac.id

ABSTRACT
Premature Rupture of Membranes (PROM) is a significant obstetric problem, characterised by rupture of the amniotic membrane before delivery, which has the potential to cause complications in maternal and infant health. Analyse the factors associated with the incidence of PROM in RSUD dr. Moewardi, Surakarta. This study used an analytic observational design with a cross-sectional approach. Inclusion criteria were medical records of pregnant women in September 2023 - August 2024. Exclusion criteria in the study were incomplete medical record data of pregnant women. A total of 200 medical records were divided into groups of 100 with PROM status and 100 with non-PROM status. Statistical analyses were performed using univariate and bivariate methods, including the chi-square test to determine significant associations. Factors that had a significant association with PROM included patient referral status (p=0.042), gestational age (p=0.014), parity (p=0.017), history of infection (p=0.001), and chronic diseases (p=0.024). Factors such as maternal age, education, occupation, marital status, and history of abortion showed no significant association with PROM. The incidence of PROM is influenced by certain factors related to the mother's condition and pregnancy, so prevention and early intervention strategies are needed for at-risk populations.

Keywords: premature rupture of membranes; pregnancy complications; pregnant women

How to cite (in APA style)
Lathifa, S. N., & Rahayuningsih, F. B. (2025). Factors Associated with the Incidence of Premature Rupture of Membranes. Indonesian Journal of Global Health Research, 7(1), 833-848. https://doi.org/10.37287/ijghr.v7i1.5450.

INTRODUCTION

Premature Rupture of Membranes is a condition when the amniotic sac ruptures early before labour or when the gestational age has not reached 37 weeks or preterm Premature Rupture of Membranes (PPROM) and Premature Rupture of Membranes can occur at or after 37 weeks gestation and is called PROM aterm or Premature Rupture of Membranes (PROM). The condition can cause complications and endanger the life of the mother and foetus (Kinasih, 2023). Premature Rupture of Membranes is related to maternal health and wellbeing as well as intrauterine foetal growth and development, it can increase health problems. Premature Rupture of Membranes is usually characterised by the discharge of water through the vagina and is said to be Premature Rupture of Membranes if it occurs before the delivery process (Kemenkes, 2023). Reproductive health in pregnant women is an important aspect in maintaining the welfare and quality of life of pregnant women (Rahmadani & Rahayuningsih, 2024). As the gestational age increases, more and more complaints are felt by pregnant women, both psychological and physical complaints (Wirata, 2022).

Low levels of knowledge among pregnant women have a significant impact on how they care for and look after themselves during pregnancy (Azizah & Sulastri, 2023). It is important for mothers to increase their activity in proactively seeking health information to support a healthier lifestyle (Rahayuningsih & Yuniawati, 2020). The health of pregnant women is normal and detecting a normal pregnancy is one of the goals (Rahayuningsih et al., 2021). Many pregnant women feel worried, anxious and restless waiting for the time of birth to

arrive (Karnina, 2019). An educational programme for pregnant women can significantly increase the level of awareness of pregnant women regarding childbirth preparation and readiness for complications (Sarkar & Mani, 2020).

Women's empowerment contributes significantly to improving the overall health of mothers, newborns, and children in developing countries. This shows a positive relationship between women's empowerment and midwifery services (Juniarti et al., 2024). There are various problems that occur in pregnant women and can affect pregnant women and fetuses to babies who are born, both in the short term, medium term and long-term consequences. A concern for pregnant women is needed both in terms of prevention and handling in order to give birth to healthy babies (Indrawati et al., 2022). A PROM problem must be given very great attention, because its prevalence is quite large and tends to increase (Trihapsari et al., 2021).

According to the World Health Organization (WHO), in 2014 the incidence of Premature Rupture of Membranes in the world was 50-60% of maternal mortality, which was 289,000 people. According to the Kementrian Kesehatan in 2017, said that the incidence of PROM occurs in about 6.46-15.6% of aterm pregnancies and PPROM occurs in about 2-3% of all singleton pregnancies and 7.4% of twin pregnancies. PPROM is a complication in about 1/3 of all preterm births, which has increased by 38% since 1981. It is predictable that obstetricians will encounter and manage PROM cases in their clinical career. A high maternal mortality rate can be caused by two main things, such as a lack of knowledge among pregnant women about the causes and management of complications in pregnancy, childbirth, and postpartum (Roobiati et al., 2019). Data (SKI, 2023) showed that 21.4% of pregnant women experienced at least 1 of 9 complications during delivery, based on the type asked. Complications that can occur during labour are: Premature Rupture of Membranes (4.3%), prolonged labour (3.3%), hypertension (3.2%), breech (3%), bleeding (2%), placenta previa (0.7%), retained placenta (0.4%), seizure (0.1%) and others (4.9%). Most referrals for complications in labour were to private hospitals (47.2%), with the largest source of financing being BPJS/KIS (74.6%).

One of the indicators of public health status is the maternal mortality rate. Indonesia's maternal mortality rate is 189 per 100,000 live births (Long Form SP2020). The trend in this 4-year period has decreased, but the number is still one of the highest among ASEAN countries. The target set in the RPJMN in 2023 is 194 per 100,000 KH and in 2024 is 183 per 100,000 KH. This achievement is still far from the SDGs target of reducing the maternal mortality rate to less than 70 per 100,000 live births by 2030. Maternal mortality cases based on data show the most cases occur in provinces with the largest population such as West Java, East Java and Central Java Provinces (Kemenkes, 2023).

The number of pregnant women in Surakarta City in 2023 was 10,476 pregnant women and all pregnant women had their first antenatal check-up, but only 10,446 pregnant women or 99.71 per cent also had a minimum of four check-ups. The estimated number of pregnant women with obstetric complications in Surakarta City in 2023 is 2,095 out of a total of 10,479 pregnant women. Of this estimate, 1,557 pregnant women or 14.86 per cent experienced obstetric complications and all obstetric complications were treated so that the coverage of obstetric complications reached 100 per cent (Dinkes Surakarta, 2023).

Maternal mortality in Surakarta City in the last five years where there was an increase in maternal mortality in 2020 to 2021 but in 2022 there was a decrease until in 2023 it became 30.72 per 100,000 live births. The number of maternal death cases in Surakarta City in 2023

was 3 cases. The occurrence of maternal deaths is motivated by the 3T factor (Late in making decisions, Late in reaching the place of service, Late in receiving treatment) and the presence of chronic/complex diseases (Dinkes Surakarta, 2023).

Based on the description above, it can be concluded that the PROM rate is still high and there are still differences between the results of research on factors that influence the incidence of Premature Rupture of Membranes. With the aim of knowing related to the factors associated with the incidence of Premature Rupture of Membranes at RSUD dr. Moewardi Surakarta in September 2023 - August 2024. So the researcher is interested in conducting research 'Factors Associated with the Incidence of Premature Rupture of Membranes at Rsud Dr. Moewardi'.

METHOD

This study uses analytical observational research. The research design used was a cross-sectional study design. Data analysis was carried out using univariate methods to identify the characteristic profiles of respondents involved in the study, as well as bivariate analysis (chi-square test) to examine the relationship between risk factors and the incidence of Premature Rupture of Membranes. The sample research population used in this study were medical records of pregnant women with Premature Rupture of Membranes and medical records of pregnant women at RSUD dr. Moewardi Surakarta in September 2023 - August 2024.

The case group is mothers who experience Premature Rupture of Membranes and the control group is mothers who do not experience Premature Rupture of Membranes. Where in the comparison between 100 medical records of mothers who experienced premature rupture of membranes and 100 medical records of mothers who did not experience Premature Rupture of Membranes. With research conducted in September - October 2024. The criteria used to determine the sample include inclusion and exclusion criteria. Inclusion criteria include in the study: Medical records of pregnant women at RSUD Dr Moewardi Surakarta in September 2023 - August 2024. Includes: mother's age, spouse's status, occupation, education, referral patient, gestational age, parity, type of pregnancy, mother's health condition, history of infection, history of chronic disease, history of prematurity, and history of abortion. The exclusion criteria for this study were incomplete medical records of pregnant women. This research instrument uses secondary data which does not use validity tests and reliability tests, this is in line with what Suparmono did in 2018.

RESULT

Table 1.
Respondent Age characteristics (n= 200)

Variabel	PROM					Non PROM					p-value
	N	Mean	Median	Mode	Std. Deviation	N	Mean	Median	Mode	Std. Deviation	
Age of Pregnant Women	100	28.66	27	24	6.283	100	31.27	32	34	6.146	0,053

Based on the results of data analysis in Table 1, the age of pregnant women who experienced PROM had an average of 28.66 years with a standard deviation of 6.283, while mothers who did not experience PROM had a higher average age of 31.27 years with a standard deviation of 6.146. The median age of pregnant women in the PROM group was 27 years, lower than the non-PROM group which had a median of 32 years. In addition, the mode age of pregnant women in the PROM group was 24 years, while in the non-PROM group it was 34 years. However, the p-value of 0.053 indicated that there was no statistically significant association between the age of pregnant women and the incidence of PROM at the 0.05 level of

significance. Although there was a difference in mean age between the two groups, this difference was not statistically strong enough to support the hypothesis that maternal age is a factor directly related to the incidence of PROMs. This indicates that other factors may be more dominant in influencing the incidence of PROM, so it is necessary to analyse other relevant variables.

Table 2.
Univariad Respondent characteristics (n= 200)

Variables	Category	PROM		Non PROM		Total
		f	%	f	%	
Couple Status	Have a partner	94	94.0	94	94.0	188
	No partner	6	6.0	6	6.0	12
Work	Doesn't work	43	43.0	41	41.0	84
	Work	57	57.0	59	59.0	116
Education	D3/S1/S2/S3	29	29.0	24	24.0	53
	High school	56	56.0	59	59.0	115
	Junior high school	9	9.0	14	14.0	23
	Elementary school	6	6.0	3	3.0	9
Referral Patient	Not a reference	68	68.0	54	54.0	122
	References	32	32.0	46	46.0	78
Gestational Age	Trimester I	0	0.0	8	8.0	8
	Trimester II	19	19.0	15	15.0	34
	Trimester III	81	81.0	77	77.0	158
Parity	Nulliparous	51	51.0	35	35.0	86
	Primipara	31	31.0	30	30.0	61
	Multipara	17	17.0	35	35.0	52
	Grand multipara	1	1.0	0	0.0	1
Types of Pregnancy	Single/Normal	23	23.0	18	18.0	41
	High/Multiple Risk	77	77.0	82	82.0	159
Maternal Health Condition	Healthy/Good	30	30.0	24	24.0	54
	Sick/Bad	70	70.0	76	76.0	146
Infection History	No history	78	78.0	94	94.0	172
	History of infection	22	22.0	6	6.0	28
Chronic Disease History	No chronic pain	75	75.0	60	60.0	135
	Chronic Pain	25	25.0	40	40.0	65
Premature History	There was no premature birth	87	87.0	92	92.0	179
	There was premature labor	13	13.0	8	8.0	21
Abortion History	No abortion	82	82.0	75	75.0	157
	Abortus	18.	18.0	25	25.0	43

This study analysed various factors associated with the incidence of PROM in RSUD dr Moewardi Surakarta. Based on the results of the data analysis table, partner status showed that the majority of respondents in this study, both in the PROM and non-PROM groups, had a partner. Of the total 200 respondents, 188 people with 94 people each in the PROM group and the non-PROM group. Meanwhile, only 12 respondents did not have a partner, with the same distribution between the PROM and non-PROM groups. The relationship between the occupation of pregnant women and the incidence of Premature Rupture of Membranes, out of 84 mothers who did not work, 43 people experienced PROM and 41 people did not experience PROM. Meanwhile, out of 116 working mothers, 57 people experienced PROM and 59 people did not experience PROM.

From the results of education data, the majority of respondents who experienced PROM were high school graduates as much as 56%, followed by D3 / S1 / S2 / S3 education as much as 29%. 9% had junior high school education, and 6% had primary school education. Meanwhile, in the group that did not experience PROMs, the majority of respondents also had

a high school education, as many as 59%, followed by 24% with D3 / S1 / S2 / S3 education. Junior high school education was recorded at 14%, and elementary school education at 3%.

In the results of data analysis of referral patient status with the incidence of PROMs. In the group that experienced PROMs, more people were not referral patients but came directly to Dr Moewardi Hospital, as many as 68 people, while 32 people were referral patients. On the other hand, in the group that did not experience PROM, there were 54 people who were not referral patients, and 46 people who were referral patients. Gestational age showed that PROMs occurred mostly in mothers in the third trimester of pregnancy with 81 cases, in the second trimester of pregnancy, 19 people were recorded, and in the first trimester there were no cases of PROM patients. While those who did not experience PROM in the third trimester were 77 people, with the second trimester reaching 15 people, and the first trimester getting 8 respondents who did not experience PROM cases.

Based on parity, there were differences in the distribution of PROM incidence between various groups. In the nulliparous group or those who have never given birth, there were 51% PROM cases, with a group that did not experience PROM only 35%. In the primiparous group or women who had given birth once, 31% experienced PROM, while 30% did not experience PROM. The multiparous group, which is women who have given birth more than once, showed 17% incidence of PROM, with 35% not experiencing PROM. As for the grandemultiparous group (women who have given birth five times or more), there were only 1% cases of PROM, in the group that did not experience PROM, the results were 0%.

In the pregnancy type group in the group that experienced PROM, 77 people were high-risk pregnancies or multiple pregnancies, while 23 people were single or normal pregnancies. Whereas in the group that did not experience PROM, 82 people were high-risk or multiple pregnancies, and 18 people had normal or single pregnancies. For maternal health conditions, it showed that in the group that experienced PROMs, 30 mothers with healthy or good conditions, while 70 mothers with sick or bad conditions experienced PROMs. On the other hand, in the group that did not experience PROMs, 24 mothers were in good or healthy condition, while 76 mothers with poor or sick condition did not experience PROMs. Overall, the total number of mothers with good or healthy condition was 54, while the number of mothers with bad or sick condition was 146.

The results of infection history obtained, 78% of women who experienced PROM had no history of infection, while 22% had a history of infection such as urinary tract infection or infection in the vaginal area. In contrast, in the group that did not experience PROM, 94% had no history of infection and only 6% had a history of infection. Meanwhile, in the group of mothers who did not have a history of chronic diseases, 75% experienced PROMs, while 60% did not experience PROMs. Meanwhile, in the group of mothers who had a history of chronic diseases, 25% experienced PROMs and 40% did not experience PROMs. Of the total 200 respondents, the group of mothers who did not have a history of preterm labour recorded 87% experiencing PROM, while 92% of this group did not experience PROM. On the other hand, in the group of mothers who had a history of preterm labour, only 13% experienced PROMs, while 8% did not experience PROMs. In the group of women with no history of abortion, 82% had PROMs, while 75% did not have PROMs. On the other hand, in the group of women with a history of abortion, 18% experienced PROMs and 25% did not experience PROM.

Table 3.
Bivariad Respondent characteristics (n= 200)

Variables	Category	PROM		Non PROM		Total	*p-Value*
		F	%	F	%		
Couple Status	Have a partner	94	94.0	94	94.0	188	1.00
	No partner	6	6.0	6	6.0	12	
Work	Doesn't work	43	43.0	41	41.0	84	0.774
	Work	57	57.0	59	59.0	116	
Education	D3/S1/S2/S3	29	29.0	24	24.0	53	0.451
	High school	56	56.0	59	59.0	115	
	Junior high school	9	9.0	14	14.0	23	
	Elementary school	6	6.0	3	3.0	9	
Referral Patient	Not a reference	68	68.0	54	54.0	122	0.042
	References	32	32.0	46	46.0	78	
Gestational Age	Trimester I	0	0.0	8	8.0	8	0.014
	Trimester II	19	19.0	15	15.0	34	
	Trimester III	81	81.0	77	77.0	158	
Parity	Nulliparous	51	51.0	35	35.0	86	0.017
	Primipara	31	31.0	30	30.0	61	
	Multipara	17	17.0	35	35.0	52	
	Grand multipara	1	1.0	0	0.0	1	
Types of Pregnancy	Single/Normal	23	23.0	18	18.0	41	0.381
	High/Multiple Risk	77	77.0	82	82.0	159	
Maternal Health Condition	Healthy/Good	30	30.0	24	24.0	54	0.339
	Sick/Bad	70	70.0	76	76.0	146	
Infection History	No history	78	78.0	94	94.0	172	0.001
	History of infection	22	22.0	6	6.0	28	
Chronic Disease History	No chronic pain	75	75.0	60	60.0	135	0.024
	Chronic Pain	25	25.0	40	40.0	65	
Premature History	There was no premature birth	87	87.0	92	92.0	179	0.249
	There was premature labor	13	13.0	8	8.0	21	
Abortion History	No abortion	82	82.0	75	75.0	157	0.228
	Abortus	18	18.0	25	25.0	43	

The results of bivariate analysis showed the relationship between various characteristics of respondents and the incidence of Premature Rupture of Membranes (PROM) at RSUD dr. Moewardi Surakarta based on the p-value. The partner status variable showed a p-value of 1.00, indicating no significant relationship between partner status and the incidence of PROM. The employment variable also showed no significant association (p-value = 0.774), as well as education (p-value = 0.451), type of pregnancy (p-value = 0.381), maternal health condition (p-value = 0.339), history of prematurity (p-value = 0.249), and history of abortion (p-value = 0.228). However, some variables showed a significant association with the incidence of PROM. Referral patient status had a p-value of 0.042, meaning there was a significant association between referral status and the incidence of PROM. Gestational age also showed a significant association, especially in the second trimester with a p-value of 0.014. Parity showed a significant association with a p-value of 0.017, indicating that maternal parity status influenced the incidence of PROM.

History of infection was a highly significant variable with a p-value of 0.001, indicating that mothers with a history of infection were more at risk of PROM. In addition, history of chronic disease was also significant (p-value = 0.024), suggesting an association between chronic disease and the incidence of PROM. Overall, this study showed that several factors, such as referral status, gestational age, parity, history of infection, and history of chronic disease, had a significant association with the incidence of PROM.

DISCUSSION

Relationship of Premature Rupture of Membranes with Maternal Age

Teenage pregnancy is one of the serious health problems in the world because it has the potential to pose a risk to both mother and baby (Tarsikah et al., 2020). Based on the results of the age of the mother taken, most of those who experienced the incidence of Premature Rupture of Membranes were around 28th and for non-incidents with an age of 32th, the p-value of 0.053 showed that there was no statistically significant relationship between the age of pregnant women and the incidence of PROM at a significance level of 0.05. Although there was a difference in mean age between the two groups, this difference was not statistically strong enough to support the hypothesis that maternal age is a factor directly related to the incidence of PROM.

This study is in line with previous research which states that the test result p-value = 0.334. This proves that there is no relationship between age and the incidence of Premature Rupture of Membranes (Ekawati et al., 2022). According to research by Nurfianto et al. (2019), the results specifically analysed teenage pregnancy and found no significant relationship between maternal age and the incidence of PROM (p = 0.496). Indicating that PROMs can occur in various age groups within the adolescent population. In other studies also show the results of research with the chi-square statistical test obtained a p value of 0.53> 0.05, indicating that there is no relationship between the incidence of Premature Rupture of Membranes in maternity mothers and age (Puspita et al., 2021).

In another study, there was a discrepancy with the results that there was a relationship between age and the incidence of Premature Rupture of Membranes at Salewangang Maros Hospital, with a statistical test obtained a p value of 0.01 (Hasifah et al., 2020). In the research of Batubara & Fatmarah (2023) has results that are not in line with the results of the Chi-Square statistical test analysis obtained a p-value = 0.009, it can be concluded that there is a relationship between maternal age and the incidence of Premature Rupture of Membranes. In other studies have results that are not aligned with the results, pvalue = 0.000 with the results there is a relationship between gestational age and the incidence of Premature Rupture of Membranes at Sabang City Hospital (Wardani et al., 2024).

The Relationship of Premature Rupture of Membranes with Spousal Status

Pregnant women who enter the third trimester have a tendency to experience anxiety and stress in waiting for the birth of a baby. in improving the well-being of a pregnant woman's mental health, support from the family is needed during pregnancy, especially from the husband, before and after childbirth. Pregnant women without support can make anxiety and stress experienced which can make unwanted things happen (Oktaviana et al., 2024). Based on the results of data analysis of partner status, it shows that the majority of respondents in the study at Dr Moewardi Hospital, both in the PROM event group and not, have a partner. (94%) in both groups. Meanwhile, only 12 respondents (6%) did not have a partner, with the same distribution. The p-value obtained was 1.00, indicating that there was no significant association between partner status and the incidence of Premature Rupture of Membranes. This indicates that partner status factors may not influence the risk of Premature Rupture of Membranes at Dr Moewardi Hospital.

While another study stated that spousal status did not provide direct evidence of the specific influence of husband support on PROM risk, it is reasonable to conclude that strong emotional and socioeconomic support from husbands may contribute to better pregnancy outcomes by reducing maternal stress and anxiety. This, in turn, may lower the risk of complications such as PROMs. Further research specifically focusing on the role of husband

support in relation to PROMs would be beneficial to draw more concrete conclusions (Kashanian et al., 2018).

The Relationship between Premature Rupture of Membranes and Mother's Work

The occupation of pregnant women with the incidence of PROM, which gets the result of the incidence of PROM with the result of 100%, with not working 43% and 57% with working. The p-value obtained was 0.774, which indicates that there is no significant relationship between employment and the incidence of PROM. These results indicate that most of the mothers in the study were employed, with a relatively equal ratio between those who experienced PROMs and those who did not. Nonetheless, the difference in proportion between working and non-working mothers in the PROM and control groups was not very significant, so maternal employment does not seem to have a clear association with the incidence of PROM based on this analysis. Another study also had similar results with the proportion of PROM cases mostly (82.9%) occurring in non-working mothers. In that case, pregnant women who did not work but experienced PROM were caused by other factors such as systemic diseases in the mother (Wulansari et al., 2023). Based on the results of other studies, it is also consistent with the p-value = 0.045 that there is a relationship between work and the incidence of PROM (Batubara & Fatmarah, 2023).

This is not in line with previous research that there is a relationship between maternal employment status and the incidence of Premature Rupture of Membranes prepregnancy with a p value = (0.001) <0.05 respondents whose employment status is at risk of experiencing Premature Rupture of Membranes is greater than respondents whose employment status is not at risk of experiencing Premature Rupture of Membranes. It is known that the type of maternal work with the incidence of Premature Rupture of Membranes in Lamongan is mostly mothers who do not work (Ekawati et al., 2022). In research conducted (Hasifah et al., 2020) explained if there is a relationship between employment and the incidence of Premature Rupture of Membranes where the p value = 0.02 which results are not in line with this study.

Relationship between the Incidence of Premature Rupture of Membranes with Education

The results of data analysis of overall education level, showed that the high school education level was the most dominant in both groups with 115%, both those who experienced Premature Rupture of Membranes and those who did not, with a slightly higher percentage in the group not experiencing PROM events 59% with PROM 57%. The most common result after high school education was D3 / S1 / S2 with a result of both groups being 53%, with more results in PROM with a result of 29%. In junior high school education there were 23% with most not experiencing PROM 14% and with the incidence of premature rupture of membranes 9%. In elementary school education there were only 9% in both groups with the results of more PROM events 6% and not 3%. The p-value obtained was 0.451, indicating that there was no significant relationship between education level and the incidence of PROM in RSUD Dr Moewardi Surakarta. This study is not in accordance with the theory which states that there is a relationship between educational factors and the incidence of PROM. From the results obtained p=0.002 in research on maternity mothers in Lamongan Regency (Ekawati et al., 2022).

Association of Premature Rupture of Membranes with Referral Patients

In the status of referral patients at Dr Moewardi Hospital as many as 78 people, of which 32 experienced the incidence of Premature Rupture of Membranes and 46 people who did not experience the incidence of Premature Rupture of Membranes. In the results of patients who came directly to Dr Moewardi Hospital as many as 112 people with 68 PROM events, and for

patients who did not experience PROm 54 people. With the results of the p-velue obtained is 0.042, showing the results of a significant relationship between referral status and the incidence of PROMs that occur at RSUD dr. Moewardi. Overall, the data showed that non-referred patients experienced more PROMs than referred ones. This indicates that status as a referral patient may have a certain role in the incidence of PROMs at dr Moewardi Hospital. This is also supported by other studies showing that distance from a health facility is a significant predictor of death due to lung inflammation and doubles the risk of death. Distance from health facilities (>10 km) is a predictor of neonatal mortality in cases of perinatal asphyxia, which can be associated with complications such as PROM (Daka et al., 2023).

Relationship of Premature Rupture of Membranes with Gestational Age

The gestational age of a total of 200 respondents, most PROM events occurred in the third trimester of pregnancy, with 81 cases (81.0%) in the PROM group, while the non-PROM group recorded 77 cases (77.0%), so the total cases in the third trimester were 158. In the second trimester of pregnancy, there were 19 cases of PROM (19.0%) and 15 cases in the non-PROM group (15.0%), for a total of 34 cases in this trimester. In Trimester I, there was no incidence of PROM with a result of 0% and 8 cases (8%). These results indicate that the third trimester has a much higher prevalence of PROM. The p-value obtained from the gestational age analysis was 0.014, indicating a significant association between gestational age and the incidence of PROMs. This finding indicates that the risk of PROM increases with increasing gestational age, especially in the third trimester.

In another concurrent study, there was an increase in respiratory complications and birth weight, which is associated with neonatal morbidity, due to the use of corticosteroids and antibiotics in all cases of PROM who underwent conservative management in neonatal outcomes especially the mean gestational age at admission (weeks) in patients with PROM was 35, 29 (±0.64 SD) versus 36.12 (±0.72 SD) in the control group, and gestational age at delivery was 36.42 (±0.68 SD) for cases with PPROM, while in the control group it was 36.98 (±0.87 SD) (Nossair et al., 2022). This study is also in line with research conducted by Novitasari et al. (2021) with the results of mothers who experienced COPD with preterm gestational age (37 weeks) as many as 325 respondents (40%) while mothers who did not experience as many as 363 respondents (44%). The p-value result is 0.001 which means that there is a significant correlation between the incidence of CPD and gestational age at Lamaddukelleng District Hospital, Wajo.

Association of Premature Rupture of Membranes with Parity

The parity variable showed differences in the distribution of PROM incidence between various groups. In the nulliparous group 51% of PROM cases, who did not experience PROM 35%. In the primiparous group 31% experienced PROM, while 30% did not experience PROM. The multiparous group showed 17% incidence of PROM, with 35% not experiencing PROM. As for the grandemultiparous group, there was 1% of PROM cases, in the group that did not experience PROM, the results were 0%. This data shows that nulliparas and primiparas are more prone to PROM. The p-value obtained was 0.017, indicating a significant relationship between parity and the incidence of PROM. This finding indicates that women with lower parity, especially nulliparous women, have a higher risk of PROM compared to women who have given birth before.

In the data from April-June 2022, there were 42 pregnant women in RSUD dr. Moewardi Surakatarta. From the aspect of parity, it can be seen that primipara respondents are more than multipara, where the number of primipara is 17 respondents (40.0%) while multipara is 13 respondents (31%), and grande is 12 respondents (28.6%) (Sulastri et al., 2023). The results

of this study are in line with research conducted by Wulansari et al. (2023), namely a parity is one of the factors causing rupture of membranes, as many as 25 respondents were primiparous mothers. In the results of research by Hasifah et al. (2020) also said that there was a relationship between parity and the incidence of PROM at Salewangang Maros Hospital with a result of p <0.02. In another study in line with the research, the results obtained a p-value = 0.002 where there was a relationship between parity and the incidence of PROM (Batubara & Fatmarah, 2023). The results of other studies have similar results related to parity with PROM with the results, it is known that p-value = 0.007 which there is a relationship between parity and the incidence of PROM at Sabang City Hospital (Wulansari et al., 2023).

Relationship between the incidence of Premature Rupture of Membranes with the Type of Pregnancy

In the type of pregnancy that experienced PROM, 77% (77 cases) were pregnancies with high risk or multiple pregnancies, while 23% (23 cases) were single or normal pregnancies. Whereas in the group that did not experience PROM, 82% (82 cases) were high-risk or multiple pregnancies, and 18% (18 cases) had normal or singleton pregnancies. From the total sample, there were 159 cases of high-risk pregnancies with a trend distribution that high-risk pregnancies were found more in the group that did not experience PROM. The p-value obtained was 0.381, indicating that there was no significant association between the type of pregnancy and the incidence of PROMs. This is consistent with other studies that vaginal bleeding, accidents, gestational age, gravidity, parity, presentation, polyhydramnios, multiple pregnancy, anaemia, and pregnancy-induced hypertension were not found to be significant predictors of premature rupture of membranes (Ali et al., 2021). In another study, the results were not aligned, the results of p = 0.037 where multiple pregnancies with Premature Rupture of Membranes there is an association (Adista et al., 2021).

Relationship of Premature Rupture of Membranes with Maternal Health Condition

Based on the mother's health condition, 30% of mothers with healthy or good conditions, while 70% of mothers with sick or bad conditions experienced PROM. On the other hand, the group that did not experience PROM, 24% of mothers with healthy or good conditions, while 76% of mothers with sick or bad conditions did not experience PROM. The results of bivariate analysis using Chi Square showed that the p-value obtained was 0.339, indicating that there was no significant association between maternal health conditions and the incidence of PROMs. These results indicate that maternal health conditions do not significantly affect the risk of Premature Rupture of Membranes.

This result is not the same as other researchers, with the results of the P value <ÿ = 0.002 <0.05, it means that there is an association between fetal location abnormalities and the incidence of Premature Rupture of Membranes. Preeclampsia variable with a value of P < ÿ = 0.006 < 0.05, indicating there is an association between preeclampsia and Premature Rupture of Membranes. Variable history of Premature Rupture of Membranes with a value of P < ÿ = 0.007 < 0.05, indicating there is an association between the history of Premature Rupture of Membranes with the incidence of Premature Rupture of Membranes (Zakiyyah et al., 2023).

Association of Premature Rupture of Membranes with History of Infection

The results showed that the presence of a history of infection may be associated with an increased incidence of PROM, although most PROM cases occurred in those with no history of infection. PROM cases with no history of infection were 78% and those with a history of infection were 22%. In cases that did not experience Premature Rupture of Membranes with a history of infection there were 6% and in patients who did not have a history of illness as much as 94%. The p-value obtained was 0.001, which indicates a highly significant

relationship between the history of infection and the incidence of PROM. These results indicate that a history of infection in pregnant women can increase the risk of Premature Rupture of Membranes. Therefore, it is important to monitor and treat pregnant women with a history of infection to reduce the risk of PROM.

Because the anatomical location of the urinary tract and reproductive tract are close together, bacteria can easily move from the urethral opening to the vagina and up through the cervix to the membranes where they cause localised inflammation. In another study with similar results, urinary tract infection was one of the factors significantly associated with premature rupture of membranes in this study. Pregnant women who experience urinary tract infections are 3.30 times more likely to experience premature rupture of membranes compared to pregnant women who do not experience urinary tract infections with a p-velue of 0.037 (Diriba et al., 2022). From the results of other studies in line with the results that experienced Premature Rupture of Membranes with a history of urogenitalia infection as many as 64 respondents (8.2%) and mothers who did not have a history of urogenitalia infection as many as 348 respondents (42%) while mothers who did not experience Premature Rupture of Membranes with a history of urogenitalia infection as many as 28 respondents (3.4%) and mothers who did not have a history of urogenitalia infection as many as 382 respondents (46.4%). With a p-value of 0.000, which means that there is a significant correlation between KPD and a history of urogenital infections at Lamaddukelleng Hospital, Wajo Regency (Novitasari et al., 2021).

Association of Premature Rupture of Membranes with History of Chronic Disease

Pregnant women who experience hypertension have a higher risk of morbidity and mortality. Many pregnant women still lack understanding about hypertension during pregnancy (Rahayu et al., 2024). The results of this study show that mothers with a history of chronic illness have a higher chance of experiencing PROM compared to mothers who do not have a history of chronic illness, although the total number of mothers with a history of chronic illness is less than those without chronic illness. The number of PROM cases with no history of chronic illness was 75% and those with a history of chronic illness was 25%. In cases that did not experience PROM 60% had no history of chronic illness with 40% who did not experience PROM but had chronic illness. The p-value obtained was 0.024, indicating a significant association between chronic disease history and the incidence of PROMs. The results obtained indicate that pregnant women with a history of chronic illness have a higher risk of experiencing Premature Rupture of Membranes. Therefore, it is important to conduct closer monitoring and appropriate interventions for pregnant women with chronic health conditions to reduce the likelihood of PROM. From the results of other studies in line with the same results, it shows that 17.4% of women with PROM have chronic diseases, which indicates an important correlation that has the same results (Ali et al., 2021). In the study of Adista et al., (2021) has results in line with the relationship between preeclampsia and PROM with the results of the study obtained a P value of 0.000, which means that there is an association with preeclampsia with the incidence of PROM.

Association of Premature Rupture of Membranes with Preterm History

The group of mothers with no history of preterm labour recorded 87% having PROM, while 92% of this group did not have PROM. On the other hand, in the group of mothers who had a history of preterm labour, only 13% experienced PROM, while 8% did not experience PROM. The p-value obtained was 0.249, indicating that there was no significant association between the history of preterm labour and the incidence of PROMs. This finding indicates that although there was a difference in the percentage of PROM between the two groups, the history of preterm labour did not significantly affect the risk of Premature Rupture of

Membranes. This is in sync with other studies that there is no significant association between history of preterm labour and premature rupture of membranes. This is in line with other researchers from Lithuania, India (Assefa et al., 2018).

Association of Premature Rupture of Membranes with History of Abortion

In the group of women with no history of abortion, 82% had PROM, while 75% did not have PROM. On the other hand, in the group of women with a history of abortion, 18% experienced PROM and 25% did not experience PROM. Overall, the number of women with a history of no abortion was 157, while those with a history of abortion totalled 43. This data showed a difference in proportion between the two groups, although the abortion history variable showed a higher rate in the group that did not experience PROM. The result obtained from the p-value is 0.228, which indicates that the history of abortion does not significantly affect the risk of Premature Rupture of Membranes. This result indicates that although there is a difference in the percentage of PROM between the two groups, history of abortion cannot be considered as a significant risk factor for PROM. Therefore, further research is needed to identify other factors that may contribute more to the incidence of PROM in the pregnant women population at RSUD dr Moewardi Surakarta. Mothers who had a history of previous abortion were 2.8 times more likely to experience PROM than those who did not. This finding is not in line with the findings reported by Getnet et al., (2023). In another study, a history of abortion was also found to be a risk factor for PROMs. Participants who had a history of abortion were 3.06 times more likely to develop PROM than those who did not have an abortion (Assefa et al., 2018).

CONCLUSION

This study showed that several factors had a significant association with the incidence of Premature Rupture of Membranes (PROM) at RSUD dr. Moewardi, namely patient referral status, gestational age, parity, history of infection, and chronic diseases. These factors can be important indicators to identify pregnant women at risk of PROM. Meanwhile, factors such as maternal age, education, employment, partner status, history of prematurity, and history of abortion did not show a significant association with PROM. These results emphasise the need for closer monitoring and early intervention, especially in pregnant women with a history of infection, chronic disease, and pregnancy in the late trimester of gestation. These efforts can help reduce the risk of complications due to PROM and improve maternal and infant safety.

Acknowledgements

The author would like to thank Dr Moewardi Hospital, Universitas Muhammadiyah Surakarta, the Research Ethics Committee of Dr Moewardi Hospital Surakarta for approving this research with Number: 2.240/IX/HREC/2024 and several parties who have helped and provided support in this study.

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