The Correlation of Parity and Premature Rupture of Amnius

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Article Information	Abstract

Premature Rupture of Membranes (PROM) is a condition where the amniotic membranes rupture before delivery. Under normal circumstances 8-10% of preterm pregnant women will experience PROM. One of the contributors to AKI is the incidence of infection where this infection is caused by PROM. Term pregnant women under normal circumstances 8 – 10% will experience PROM. Preterm PROM occurs in 1% of pregnancies. PROM is more common in multiparous and grand multiparas due to excessive uterine motility, reduced cervical flexibility. The aim of the research was to determine the correlation between parity and the incidence of premature rupture of membranes at UMMI Hospital, Bogor City in 2023. This research used a cross sectional correlation design with medical record data as the data source. The samples were all mothers who gave birth with premature rupture of membranes. The measurement results were analyzed using the Chi Square test. The Chi square statistical test shows a value of $p = 0.018$ ($p < 0.05$), so Ha is accepted or Ho is rejected. There was a correlation between parity and the incidence of premature rupture of membranes. Further research can elaborate the trigger variables occurrence of PROM. This data can be used as primary data to obtain more results complete, accurate and valid.

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INTRODUCTION

One of the contributors to maternal mortality rate is infection, where the infection is caused by premature rupture of membranes. The is an important problem in obstetrics which is related to complications from premature birth and the occurrence of infectious chorioamnionitis to sepsis, which increases perinatal morbidity and causes infection in the mother. Cases of bleeding and infection are direct causes contributing to maternal mortality rate. K amniotic fluid Premature rupture (PROM) is a condition where the amniotic membranes rupture before delivery. Under normal circumstances, 8-10% of preterm pregnant women will experience PROM and 1% of them will experience premature PROM where the gestational age has not reached 36 weeks. According to Nugroho (2012) PROM or *premature rupture of the membrane* (PROM) is rupture of the membranes in parturition, namely when the opening in primiparas is less than 3 cm and in multiparas less than 5 cm, regardless of gestational age. PROM is premature rupture of the membranes without any signs of birth. Most premature rupture of membranes occurs around 37 weeks of gestation. (Raydian & Ulfah, 2020).

Parity is the number of children born to a person. The lowest part of the fetus has not yet entered the pelvic outlet. This also has an effect. This is because in primiparas the lowest part of the fetus descends into the pelvic cavity and into the PAP at the end of week 36 of pregnancy, whereas in multiparas it occurs when labor begins. So that in multiparas there is no lower part of the fetus that covers the PAP, which can reduce the lower membrane. (Ningtias, 2019) The cause of PROM in some cases is not yet known and cannot be determined with certainty. Mochtar in Maharrani & Nugrahini (2017) stated that factors that are closely related to PROM are multipara/parity, malposition, and pelvic disproportion, amniotomy where the membranes are broken too early. This pregnancy becomes risky if PROM occurs. Factors that cause PROM include parity, maternal age, amniotic membrane abnormalities, short cervix, indexation, incompetent cervix, trauma, constipation, hydramnios, location abnormalities, alcohol and smoking, amniotic membrane abnormalities, CPD, age, blood type factors, nutritional deficiencies.

(Nugraheni & Romdiyah, 2019)

Raydian and Rodiani (2020) stated that PROM is more often found in multiparous women than in nulliparous women. Manuaba Theory (2010) in Raydian & Rodiani (2020) also stated that parity (multi/grand multipara) is a factor causing PROM. Multiparous women, often found to have an incompetent cervix, will increase the risk of PROM due to intrauterine pressure during delivery. The process of opening the cervix in multiparous with cervical incompetence accelerates cervical opening so that it can increase the risk of PROM occurring before complete opening (Raydian & Ulfah, 2020). The condition of PROM needs to be carefully monitored because it can be an emergency condition. Potential complications due to PROM include infection of the mother and baby, placental disorders (placenta solution (when the placenta falls/separates from the uterine wall), umbilical cord infection and premature birth. Efforts that can be made to reduce the incidence of PROM are by carrying out regular pregnancy checks routine to detect as early as possible the signs and symptoms that can cause PROM events, so that they can be treated quickly and appropriately to reduce these complications. Apart from that, they can also be anticipated with adequate rest and optimal nutritional intake. In this case, the mother can still rest. do light daily activities and limit yourself from tiring activities. Fulfilling adequate protein needs is very necessary for cell growth and repair and lipid transformation, as well as preventing excessive weight gain. (Salamah & Prasetya, 2019) Many previous research results explain how parity is related to the incidence of PROM. As in the research of Raydian (2017), Maharrani (2017) Meilinda (2020), both obtained results that parity has a close correlation with the incidence of PROM and added by Haryanti (2019) that mothers who have high parity have a 2,891 times greater risk of experiencing PROM.

WHO (*World Health Organization*) defines maternal death as the death of a woman that occurs during pregnancy, childbirth or within 42 days after delivery from causes that are directly or indirectly related to the birth. Regarding the issue of maternal mortality, the community claims that the 2030 *Sustainable Development Goals* (SDG's) target certainly needs to receive special attention from all parties, both the government and the private sector,

namely reducing the Maternal Mortality Rate (MMR) below 70 per 100,000 live births (Zahara, 2021). According to WHO, the incidence of PROM in the world in 2017 was 50-60% (Wulandari et al., 2019). Based on data in Indonesia, it was 65%, the incidence of PROM occurred in 2020, the incidence of PROM in West Java was 230 cases out of 4834 (4.75%) most cases of maternal death This is caused during childbirth as well as the postpartum period. (Puspita et al., 2021)

Meanwhile, according to the Health Department Bogor district had 12 cases of maternal death or 56.83/100 thousand live births who experienced PROM (3%). The incidence of PROM ranges from 8-10% in term or term pregnant women, while in preterm pregnancy it occurs in 1% of pregnancies. In term pregnancies, 90% of births occur within 24 hours after the membranes rupture. At 28-34 weeks of gestation, 50% of births occur within 24 hours and at less than 26 weeks of gestation, delivery occurs within 1 week. (Ayuningtias, 2020)

PROM occurs in around 4.5-7.6% of all pregnancies. Meanwhile, the incidence of PROM according to Varney, Kriebs and Gregor is around 2.7-17%, depending on the length of the latent period used to make the diagnosis. Under normal circumstances 8-10% of term pregnant women will experience PROM. Preterm PROM occurs in 1% of pregnancies (Raydian & Rodiani, 2020). Meanwhile, the results of a preliminary study conducted at the UMMI Hospital in Bogor City in November 2022 obtained data from January – October 2022 there were 369 patients (18%) mothers who experienced PROM.

METHOD

The research design was an analytical survey with a cross sectional research design on the medical records of mothers giving birth at Ummi Hospital, Bogor City in January and February 2023. The sampling technique used a total sampling technique, namely 353 respondents. The research instrument used sheet checklists which were made in accordance with needs such as identity, parity mother, age, pregnancy and the incidence of PROM. The variables in this research consist of independent and dependent variables. The independent variable was parity while the dependent variable was the incidence of PROM. The data collection technique used total sampling. The data analysis used *chi square test*.

RESULTS

Table 1 Frequency Distribution Characteristics Respondent

Characteristics	Frequency	Percentage
Age		
< 20 years and < 35 years	125	35.4
20 – 35 years	228	64.6
Education		
< High school	78	22.1
SMA – PT	275	77.9
Work		
Work	54	15.3
IRT	299	84.7
Gestational Age		
Preterm/ postterm	44	12.5
Aterm	309	87.5
Childbirth pathology		
There is	296	83.9
There isn't any	56	15.9
Parity		
Primipara	90	25.5
Multiparous	263	74.5
PROM		
PROM	63	17.8
Not PROM	290	82.2

Based on table 1 below, it shows that of the 353 respondents, there were 228 people (64.6%) aged 20-35 years. 275 people (77.9%) had a minimum of high school education, 299 (84.7%) were housewives. Respondents with a term or term pregnancy were 309 (87.5%) while those who experienced birth pathology were 296 (83.9%). A total of 263 people were multiparous and 63 people experienced PROM (17.8%).

Table 2 Connection Parity with PROM

Parity	PROM				Total		p value
	Yes		No				
	n	%	n	%	n	%	
Multiparous	39	11.0	224	63.5	263	74.5	0.018
Primipara	24	6.8	66	18.7	90	25.5	
Total	63	17.8	290	82.2	353	100	

Based on table 2 above, it is known that Mother There were 39 people with PROM and multiparas (11%) while there were 224 people (63.5%) who did not experience PROM. *Chi square* statistical test results there are marked $p = 0.018$ ($p < 0.05$), then can conclude that there is a correlation between parity with the PROM incident.

DISCUSSION

Parity is the number of children born to a person. In multiparas, grand multiparas, the incidence of PROM is greater, this is not caused by increased uterine activity but rather fragility due to intrinsic weakness of the uterus caused by previous trauma to the cervix, especially during a history of vaginal delivery, cervical dilatation and curation. This situation is proven by the presence of painless cervical dilatation in the second and third trimesters of pregnancy which is accompanied by prolapse of the amniotic membrane through the cervix and protrusion of the membrane in the vagina. This event is followed by rupture of the membranes followed by expulsion of the immature fetus so that the fetus will likely die. (Wika, 2019)

In research from 353 respondents as a sample, it was found that more than 263 people were multiparas (74.5%) while 90 people were primiparas (25.5%). The results of this study are in line with research by Jannah (2018) which obtained results that 9 out of 11 respondents who had parity of 1 birth did not experience PROM (81.8%), 19 of 30 respondents who had parity of 2-4 births experienced PROM (63, 3%), 16 of 19 respondents who had parity ≥5 times gave birth experienced PROM of 84.2%. (Jannah, 2018)

According to Cunningham in Ayuningtyas (2020) membrane amniotic fluid will experience ripening and thinning, circumstances This will cause membrane amniotic fluid to easily break. Beside That age approaching pregnancy _ term Mother pregnant often experience uterine contractions or what is called his companion, in matter This Mother multiparous maternity conditions her cervix Already open will more easily the occurrence of PROM compared with Mother primiparous birth conditions her cervix Still close. The mother who gave birth is several times morerisky experiencing PROM, because vascularization of the uterus occurs resulting in disruption _ connective tissue membrane amniotic fluid easily fragile and final broken spontaneous. (Ayuningtias, 2020).

Pregnancies that are too frequent, multipara or grade multipara affect the embryogenesis process, the amniotic membranes are thinner so they easily rupture prematurely. The theoretical statement states that the more parity, the easier it is for amniotic infections to occur due to damage to the cervical structure in previous births. PROM is more common in multiparas, due to decreased reproductive function, reduced connective tissue, vascularization and a cervix that has opened one cm due to previous births (Arma & Sagita, 2019). PROM is broken amniotic fluid before There is signs giving birth and waiting an hour before commencement sign labor. Causing factors broke membrane amniotic fluid is there hyper mortality uterus that happened a long time ago before amniotic fluid rupture, abnormality amniotic fluid that is membrane amniotic fluid too thin, factor predisposition like multiparous, malposition, disproportion, cervix incompetence and artificial PROM. Cause of lack of connective tissue and vascularization in membrane amniotic fluid is

very weak and easily broken with discharge amniotic fluid. (Salamah & Prasetya, 2019)

This research obtained data that as many as 63 people (17.8%) of the 353 respondents experienced PROM. Meanwhile, those who did not experience PROM were 290 people (82.2%). Amniotic fluid physiology moment pregnancy taking place is give chance development fetus with free to all direction, cause pressure when the occurrence of trauma, as buffer to hot and cold, when amniotic fluid in partum can spread His strength was so cervix can opening, cleaning road born Because have ability as disinfectant, and so on lubricant. (Barokah & Agustina, 2022). According to Raydian (2017) i ma'am multiparous maternity almost completely experiencing PROM. In previous multiparas Already happens more from once you can influence reduced strength uterine and abdominal muscles. This influences membrane strength for withholding fluid amniotic fluid so that intrauterine pressure _ increases and causes membrane fluid amniotic fluid more prone to For broken. PROM in multiparas is also caused by several mutual factors _ related that is education, age, occupation or activity (Arma & Sagita, 2019).

The results of this study stated that 39 multiparous mothers experienced PROM (11%) while 224 people did not experience PROM (63.5%). *Chi square* statistical test results there are marked $p = 0.0\ 18$ ($p < 0.05$), then can conclude that there is a correlation between parity with PROM incident with OR value 0.479 means Mother with multiparous have opportunity 0.479 times experienced PROM.

This research is in line with research by Jannah (2018) which states that the parity of pregnant women at the Sultan Agung Islamic Hospital Semarang shows that the majority of respondents have given birth 2-4 times, namely 30 respondents (50%), and the incidence of PROM is that the majority of respondents experienced PROM, namely 37 respondents (61.67%), the calculated $x^{2\ value}$ was 12.919 and *p value*: 0.002. Another study found that the majority (67.5%) of PROM occurred at parity 1 and more than 3, whereas most mothers who did not experience PROM occurred at parity 2-3 (53.8%). The statistical test results obtained $p = 0.028$, meaning there is a correlation between parity and PROM. The OR value = 2.414, which means that mothers with parity 1 and >3 are 2.4 times more at risk of developing PROM compared to mothers with parity 2-3. This research is also in line with Merti Demiarti's research at RSU PKU Muhammadiyah

Bantul Yogyakarta with a *p value* = 0.001, which means there is a correlation between parity and the incidence of PROM. According to Morgan and Hamilton in Wulandari (2018) parity is one of the factors that causes PROM because increased parity allows damage to the cervix during the previous birth process. This is because in primiparas the lowest part of the fetus descends into the pelvic cavity and into the PAP at the end of week 36 of pregnancy, whereas in multiparas it occurs when labor begins. So in multiparas there is no lower part of the fetus that covers the PAP, which can reduce the lower membrane.

In grand multiparas, the incidence of PROM is greater, this is not due to increased uterine activity but rather fragility due to intrinsic weakness of the uterus caused by previous trauma to the cervix, especially during a history of vaginal delivery, cervical dilatation and curation. This is also in accordance with the theory of Manuaba (2010) which states that parity (multi/grande multipara) is a common causal factor in the occurrence of PROM. Meanwhile, according to Geri Morgan and Carole Hamilton in Wulandari (2018), parity is one of the factors that causes PROM due to increased parity which allows damage to the cervix during the previous birth process and another theory also states that the risk of PROM occurring is more common in grand multiparas which is caused by motility. excess uterus, hanging stomach, reduced flexibility of the cervix so that premature opening of the cervix can occur, which results in PROM. (Wika, 2019)

Parity can cause PROM because this factor is directly related to reproductive capacity. PROM is more common in multiparous and grand multiparas which is caused by excessive uterine motility, reduced flexibility of the cervix so that the cervix opens too early which results in rupture of the membranes. 8 Wiknjosastro said that parity 2-3 (multipara) is the safest parity in terms of maternal death. The higher a person's parity, the higher the maternal mortality rate. Parity 2-3 is considered safe in undergoing the process of pregnancy and preparation for childbirth, because at this parity the mother already has experience in undergoing the process of pregnancy and childbirth.

CONCLUSION

Based on the research results above, it shows that of the 353 respondents, 263 people were multiparous and 63 people experienced PROM (17.8%). There were 39 people with PROM and multiparas (11%) while there were 224 people who

did not experience PROM and were multiparas (63.5%). *Chi square* statistical test results there are marked $p = 0.0\ 18$ (p < 0.05), then can conclude that There is connection between parity with the PROM incident.

SUGGESTION

Further research can elaborate the trigger variables occurrence of PROM. The data can be used as primary data to obtain more results complete, accurate and valid.

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CONFLICT OF INTEREST

This Study explains objective that is for knowing connection parity with PROM incident researchers use anonymity to enter identity data.

AUTHOR CONTRIBUTIONS

First writer responsible answer to the entire research process, begins the writing process until publication. Second wroter on duty in search literature and theory, and discussion. Third writer in charge of the data collection and creation process results study.

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