

Gemelli and Gestation are Risk Factors of Premature Rupture of Membranes In Private Hospitals, Buleleng District

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Abstract. Maternal and Child Health is one of indicator that states the health of a country. Premature rupture of membranes (PROM) is one of the complications during pregnancy and childbirth. If there is a rupture prematurely it will increase the risk of infection. PROM is one of the most common pregnancy complications encountered. Incident of PROM ranges from 2.7% -17%. The purpose of research is to show at risk factors of PROM on maternity of demographic characteristics. Data were analyzed using logistic regression with STATA SE 12. The results show that above 37 weeks gestation increases the risk of occurrence PROM up to 5 times compared to less than 37 weeks gestation (AOR 5.2; CI 1:28 to 21:19; p 0:02) and the gemelli pregnancy increased to 142 times occurrence of PROM (AOR 142.39; CI 59.95-338.22; p 0:01). Monitoring and screening of pregnancy should be further optimized to be able to anticipate the risk of occurrence of PROM.

Keyword: PROM, Gemelli, Gestational, Buleleng District

1. Introduction

Maternal and Child Health is one indicator that states the health of a country. Lowers maternal mortality rate (MMR) into the objectives of the *Millennium Development Goal's* (MDGs) which continues to the goal of *Sustainable Development Goals* (SDGs) [1]. According to the Indonesian Demographic Health Survey (IDHS) 2012 average maternal mortality increased from previous data in 2007 about 228 / 100,000 live births into 359 / 100,000 live births. The main causes are recorded is still occupied by 28% postpartum hemorrhage, eclampsia 24% and 11% infection. One cause of the infection is Premature Rupture of Membranes (PROM) who did not get immediate treatment [2].

PROM is one of the complications during pregnancy and childbirth. If there is a rupture prematurely it will increase the risk of infection. PROM is one of the most common pregnancy complications encountered. Incident of PROM ranges from 2.7% -17%. The incidence of PROM further increased in women with an incompetent cervix, polyhydramnios, malpresentation, gemelli or infection of the cervix and vagina [2]. PROM incident in Indonesia ranges from 4.5% -7.6%, while in Asia such as Malaysia, Thailand, Philippines and India the ranges from 6% -12% [3].

The cause of the PROM not known for certain, but it is likely that predispose is an infection that occurs directly on the membranes. Premature rupture occurs due to uterine contractions and stretching repeatedly causing collagen catabolism and activities change causing the rupture [4].

Predisposes PROM still not known for sure but from some of the results of research on the risk factors that lead to the PROM were age is too young and too old [5], parity [6], malpresentation [7], gemelli, suppression of pressure intrauterine and heredity [7]. The gestation period is also a risk factor for PROM which is also related to the occurrence of hypoxia in infants caused by meconium aspiration syndrome (MAS) [8]. So from this case the researchers are interested to conduct research using secondary data on a Private Hospital in Buleleng District about the risk factors of the PROM.

This research used RSU Kertha Usada hospital where in the documentation of a very neat and well stored from year to year and this hospital has always been progressing every year in service especially maternal and child health. This study aims to show at risk factors of PROM on maternity of demographic characteristics

2. Methodology

This research used study analytic longitudinal by conducting a retrospective analysis of secondary data cohort women giving birth in RSU Kertha Usada hospital period from January to December 2015. This hospital is one of the largest private hospitals in Buleleng. This research was conducted in VK room and medical records room of RSU Kertha Usada. Data was collected using in table extract and converted into Microsoft Excel. The analysis used logistic regression with the software STATA SE 12. Multivariat analysis show the risk of PROM with p value 0.05.

3. Results

The proportion of incidence of the PROM in RSU Kertha Usada at 7.38% of the total 718 were born during January-December 2015. The variables studied descriptively outlined in the table below.

Table 1.1 Demographic Characteristics As Risk Factor premature rupture of membranes (PROM) at the Kertha Usada Hospital in Buleleng, Bali

Demographic Characteristics	PROM (N = 53) n (%)	No PROM (N = 665) n (%)
1	2	3
Demographic Characteristics		
Education Capital		
higher education	48 (90,6)	644 (96,8)
low education	5 (9,4)	21 (3,2)
Status Health Insurance		
Has	23 (43,4)	311 (46,8)
Not having	30 (56,6)	354 (53,2)
Gemelli		
No	9 (17)	635 (95,5)
Yes	44 (83)	30 (4,5)
Abnormalities layout		
No	52 (98,1)	609 (91,6)
Yes	1 (1,9)	56 (8,4)
Gestational		
≤ 37 Week	3 (5,7)	42 (6,3)>
> 37 Week	49 (94,2)	623 (93,7)
Parity		
Multigravida	29 (54,7)	459 (69,1)
Primigravida	24 (45,3)	205 (30,9)

Based on table 1.1 shows the demographic characteristics of the PROM incident 90.6% of mothers with higher education and do not have health insurance status as much as 56.6%. Furthermore, seen from the characteristics of gestation that the incidence PROM was gemelli 83% of pregnancies, 1.9% by malpresentation, gestation > 37 weeks and multigravida 94.2% and 54.7%.

Table 1.2 Bivariate and Multivariate Analysis of Characteristics Gestational Risk Factors of PROM in Kertha Usada Hospital Buleleng, Bali.

Characteristic	Crude OR	95% CI (p)	Adj.Odds Ratio	95% CI (p)
	Bivariate		Multivariate	
1	2	3	5	6
Demographic Characteristics				
Education Capital				
Higher education	1.00(reff)		1.00 (reff)	
Low education	3.2	1.15-8.84 (0.02)*	3.12	0.56-17.41(0.19)
Health Insurance Status				
having	1.00(ref)		1.00 (ref)	
Not having	1.14	0.65-2.01 (0.64)	0.80	0.35-1.82 (0.60)
Pregnancy Gemelli				
No	1.00 (ref)		1.00 (ref)	
Yes	103.48	46.26-231.49 (0.01) *	142.39	59.95-338.22(0.01)*
Malpresentation				
No	1.00 (ref)		1.00 (ref)	
Yes	0.21	0.03-1.54 (0.13)	0.72	0.07-7.47(0.78)
Pregnancy age				
≤ 37 Week	1.00 (ref)		1.00 (ref)	
>37 Week	1.10	0.33-3.68 (0.88)	5.2	1.28-21.19 (0.02)*
Parity				
multigravida	1.00 (ref)		1.00 (ref)	
primigravidas	1.85	1.05-3.26 (0.03) *	1.35	0.59-3.05 (0.48)

Table 1.2 shows the risk factor PROM of bivariate and multivariate analyzes. Based on bivariate analysis, showed characteristics that increase the risk of gestational PROM are mothers with lower education (OR 3.2; CI 1.15-8.84; p 0.02), multiple pregnancy (OR 103.5; CI 46.3-231.5; p 0.01), and the parity (OR 1.85 CI 1:05 to 3:26; p 0.03).

Multicollinearity test has been performed for all variables that will be incorporated into the model. The results showed that there was no correlation test variables that have more than 0.6 so that all the variables *feasible* for inclusion in the model. Multivariate analysis using logistic regression of six (6) variables demographic characteristics, there are two (2) variables as risk factor PROM was gestational age (AOR 5.2, CI 1:28 to 21:19; p 0:02) and gemelli (AOR 142.39, 59.95-338.22; p 0:01).

4. Discussion

PROM is one of the complications that occur only in maternity. PROM is not treated immediately contribute to incident infection which is cause 11% of maternal deaths in Indonesia [2]. Risk factor of PROM seen from maternal factors, placenta and fetus. Prevalence of PROM in developed countries ranges between 0.1% until 20% of birth and it associate with mortality perinatal between 18% -20% [9], [10]. This study showed the incidence of PROM is 7.38% of the 718 births in Kertha Usada Hospital. Compared with the prevalence in poor countries as much as 3.3% [11]. Incident of PROM in Indonesia ranges from 4.5% -7.6%, while in Asia such as Malaysia, Thailand, Philippines and India ranges from 6% -12% [3].

The bivariate analysis shows the variables that are risk factors PROM are lower education (p 0:02), gemelli (p 0:01) and primigravida (0:03). Low educational process in line with the low knowledge and understanding related to the signs of the PROM [12]. Parity is not correlate with the PROM [13]. The variables that proved to be a risk factor PROM is gemelli and gestation, which is also supported through the strata of test based on the status gemelli showed that in the case of gemelli with gestation (> 37 weeks), the risk of PROM also increased up to 9.1 times higher than in gestation less than 37 weeks (p

0:01). This is consistent with the theory of labor whereby increasing gestational age the placenta is also matured so there prostaglandin hormones that can contribute to the rupture of the membranes or amnion layer [14].

Gemelli increase the risk PROM up to 142 times compared pregnancy without gemelli. Multiple pregnancy contributed to the 7% -10% in the case of the PROM [10]. Pregnancy gemelli cause excessive stretching of the uterus which also directly impact the amnion layer depletion. Amnion layer serves to protect and preserve amniotic fluid [14]. The increasing gestation cause the elective labour for PROM case must be taken to reduce the risk of infection that can occur [10,15].

5. Conclusion

Above 37 weeks gestation increases the risk of occurrence PROM up to 5 times compared to less than 37 weeks gestation (AOR 5.2; CI 1:28 to 21:19; p 0.02) and the gemelli increased 142 times risk of PROM (AOR 142.39; CI 59.95-338.22; p 0:01).

6. Suggestion

Monitoring and screening during pregnancy as early as possible, especially for detecting the occurrence of multiple pregnancies. Counseling couples about the signs of premature rupture of health workers should be improved to reduce infant mortality.

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