The Risk of Malaria Incidence Against, Intra Uteri Fetal Death In The Mimika Regency In The Year 2017

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Abstract - Background: Malaria is one of the most common contagious diseases in Indonesia. Malaria disease has an enormous influence on the morbidity and mortality rate of infants, toddlers and pregnant women and can lead to decreased work productivity. The risk of malaria will result in anemia of 3-15%, low birth weight 13-70% and neonatal mortality 3-8%. Influence Malaria infection in pregnancy to fetus will cause abortion, preterm labor, LBW, and IUFD.

Objective: This study aims to determine the risk of age, parity, malaria motherhood against KJDR incidence in Mimika Regency in 2017

Method: This research is a research using quantitative research method with case control research design. Sampling with 1: 1 comparison technique Case and control, sample size for IUFD number 36 respondents. Data source derived from medical record. Data analysis using Chi-Square with significance level (α) <0,05 and OR 95%

Results: In multivariate test of multiple logistic regression the degree of significance P> 0.25 in the results: maternal age categorical, parity has no influence whereas for categorical tribe / race have influence and risk of IUFD in pregnant women who have history of malaria disease in pregnancy 5,5 times bigger (95% CI 1,323 - 22,862) than those not suffering from malaria in pregnancy. There is a malaria effect on KJDR incidence in Mimika Regency

Keywords: Malaria, IUFD

1. INTRODUCTION

Malaria is one of the most common infectious diseases in Indonesia. Malaria disease has a great influence on the morbidity and mortality rate of infants, children under five and pregnant women and can lead to decreased work productivity (Dirjen PP Kemenkes RI, 2010). According to WHO data, about 4.2 billion people (nearly half the world's population) are susceptible to malaria. In 2015, 214 million people were infected with malaria and 438,000 died. The mortality rate from malaria is much higher than that of ebola that triggered the death of 4,000 people in Africa in 2015.

Strategic Plan of the Ministry of Health Year 2015-2019, in the last 5 years, Neonatal Death Rate (AKN) remains same with 19 / 1.000 KH. Causes of death caused by Intra Uterine Fetal Death (IUFD) as much as 29.5% and Low Birth Weight (LBW) of 11.2%. The neonatal mortality rate in Papua Province is still above the national figure of 64 per 1000 KH, whereas the number of MMR 132 per 1000 kh and the number of deliveries assisted by new Nakes is 35.5% (Profile of DHO Prop, 2016)

The Mimika district has a malaria incidence rate of 800 APIs per 1000 population, with the largest number of 10 diseases in mimika 2016 is malaria ranks second after ARI with 51,275 cases (Profile of Mimika 2017). The researchers got from the District Health Office Mimika 2017 the number of births as many as 3250 KJDR 36 people or 1.1% ,. The risk of malaria will result in anemia of 3-15%, low birth weight 13-70% and neonatal mortality 3-8% (Suparman, 2005). Pregnancy will aggravate the malaria suffered, otherwise malaria will affect pregnancy and cause complications both to the mother and the fetus it contains. Infection of malaria infection in pregnancy to fetus will cause abortion, preterm labor, low birth weight (LBW), and fetal death in uterus (KJDR) (Soedarto, 2011). Some of the risk factors that can cause malaria itself can be seen from several factors, namely from parasite factors, host factors, social factors and geography (Harjanto, et al, 2012)

The occurrence of malaria infection is caused by individual factors and environmental factors. Individual factors such as age, sex, genetic, pregnancy, nutritional status, outdoor activities at night, and environmental risk factors such as housing, seasonal conditions, socioeconomic conditions, etc. Predictor factors affecting LBW, Abortion and KJDR is generally multifactoral, so sometimes it is difficult to take precautions. Rahmawaty, et al (2014) in his study said that age, education, number of deliveries are risk factors for malaria incidence but not statistically significant. Risk factors associated with low

birth weight according to Shah and Ohissin (2002) include short birth intervals, birth history of birth weight, race, maternal age, nutritional status, socioeconomic status, excessive alcohol consumption, smoking, irregular antenatal, marital status, placental factors, genetic factors and pharmacological factors (Tazkiah, 2013)

Rijanti (2009) The tribe of a nation is a group of people who identify themselves with each other based on lineage that is considered the same as referring to the characteristics such as: culture, nation, language, religion and behavior. The ethnic group is a social group distinguished from other social groups, because it has the most basic and general characteristics relating to its origin, place of origin, and culture.

2. MATERIALS AND METHOD

This study used a retrospective approach with the design of case control research. This research was conducted in April - May 2018 located in Mimika Regency, Papua Province. The population in this study were all mothers in Mimika Regency 2017. The population in this study was cases, KJDR: 36 cases. Samples of cases used are infants born KJDR with a history of mothers who suffer from malaria while control cases are non-infants, KJDR from mothers who do not suffer from malaria. With the number of samples KJDR 36 cases. The sampling technique used the selection of 1: 1 ratio and the total sampling formula. Methods of data collection from patient's medical record while maintaining data confidentiality. Univariate Analysis Performed on each research variable to see the frequency distribution of each variable. Bivariate analysis in this study using Chi square test to test the research hypothesis among independent variables / free ie age of mother, parity, ethnic / race to dependent variable / bound that is, KJDR.

RESULTS

Univariate Analysis Characteristics of respondents KJDR

1. Age

The comparison of the difference in the proportion of KJDR incidence between the respondents and the age categorical of risk and age was not hazardous to the control group and case group that was mostly 27 respondents (75%) were not at risk and did not have KJDR (control group) incidence. While respondents who have a risky age in pregnancy as many as 7 respondents (19.4%) experienced the occurrence of LBW (case group).

2. Parity

The comparison of the difference in the proportion of KJDR incidence between the respondents and the risk-parity categorically and the parity was not noisy for the control group and the case group, which was 27 respondents (75%), the parity was not at risk and did not

suffer from KJDR (control group). While respondents who have parity at risk of pregnancy a small part as much as 7 respondents (19,4%) experience of KJDR (case group).

3. Tribe

The comparison of the difference in the proportion of KJDR incidence between the respondents and the categorical tribes of Papua and Non Papuan tribe in the control group and the case group that is small as many as 16 respondents (44%) non-Papuans did not experience the KJDR incident (control group). While the majority of Papuan respondents are 26 respondents (72.2%) experienced KJDR incident (case group).

4. History of Malaria

Comparison of the difference in the proportion of KJDR incidence among respondents who did not have a history of malaria disease in pregnancy and respondents who had a history of malaria disease in pregnancy in the control group and case group that was mostly 24 (60%) of respondents who did not have a history of malaria did not experience KJDR control group). While respondents who have history of malaria disease in pregnancy mostly 11 (78,6%) experience of KJDR (case group).

Bivariate Analysis

Bivariate analysis was conducted to find out the correlation of one independent variable with one dependent variable, which was done with Chi-0,05 statistical test. If p-value is smaller than α (p <0.05), meaning that there is a meaningful relationship of Square. The degree of confidence used is 95% (α = (significant) of the two variables studied. When p-value is greater than α (p> 0.05), meaning there is no significant relationship between the two variables studied

1. Effect of Age on KJDR

In Chi square test the variable obtained p-value 0.777 (p-value> 0,05) obtained OR = 1,381. So it can be concluded that there is no influence between age to KJDR events.

2. Effect of Parity on KJDR events

In the Chi square test the variable obtained p-value 0.285 (p-value> 0.05) obtained OR = 2.071. So it can be concluded that there is no influence between parity to KJDR events

3. The influence of the Tribe on the KJDR incident

In Chi square test the variable obtained p-value 0,220 (p-value> 0,05) got OR = 0,481. So it can be concluded that there is no influence between the tribe against KJDR events

4. Effect of Malaria Disease History on KJDR incidence

In Chi square test, the history of malarial disease in pregnancy obtained p-value 0.005 (p-value <0.05) obtained OR = 5.5. So it can be concluded that there is influence between history of malaria disease in pregnancy to KJDR incident. A history of malaria disease in pregnancy has a higher chance of KJDR. The confidence interval (CI) of the lower limit of 1.323 and the upper limit of 22.862 so it is said that the stronger the suspicion if a malaria disease occurs in pregnancy is a risk factor for KJDR. This means that the risk of KJDR in pregnant women who have a history of malaria in pregnancy 5.5 times greater than those not suffering from malaria in pregnancy.

Table 1. Influence of age, parity, ethnicity and history of malaria disease on KJDR incidence

Variabel	Pearson Chi-Square	Odds ratio (OR)	95% Confidence Interval	
			Lower	Lower
Age	0,777	1,381	0,451	4,225
Parity	0,285	2,071	0,705	6,086
Tribe	0,220	0,481	0,180	1,283
Malaria Disease experience	0,005	5,5547	1,758	17,503

Multivariate Analysis

Multivariate analysis was aimed to estimate the relationship between age, parity, ethnicity and history of malaria disease on KJDR incidence. The analysis used was multiple logistic regression with 95% confidence level (95% CI).

Multivariate logistic regression of independent subvariabel age, parity, ethnicity, history of malaria disease on KJDR incidence

1) Selection of Modeling Candidate Variables

Table 2. Selection Result of Candidate Variable to be included in Multivariate Analysis

No	Variables	Sig.	Note
1	Age	0,775	Not candidate
2	Parity	0,285	Not candidate
3	Tribe	0,220	candidate
4	Malaria Disease experience	0,002	candidate

If the result of bivariate analysis between independent and dependent variables yields p-value <0.25, then the independent variable is entered into multivariate analysis stage

Table 3 Analytical Results of Multiple Logistic Regression

		Sig.	Exp(B)	95% C.I.for EXP(B)	
				Lower	Upper
Step 1[a]	Tribe	0,438	0,660	0,231	1,886
	Malaria	0.007	5,043	1,563	16,276
	Constant	0,193	0,220		

DISCUSSION

1. Age

Based on this research, it is found that the distribution of respondents most of the age is not risky in the control group with 27 respondents (75%) but there is case group 7 respondents (19,4%). On the bivariate test, the p-value 0,777 (p-value> 0,05) obtained OR = 1,381. So it can be concluded that there is no influence between age to KJDR events. This research is not in line with research conducted by Nurfadila (2013) said that there is a relationship between maternal age with the incidence of KJDR with the value of ρ (0.007)

However, the research conducted by Gerungan (2016) the relationship between maternal age and the incidence of IUFD obtained value ρ value = 0,594 (ρ> 0,05) meaning there is no significant relationship between mother age with incidence of IUFD.

The result of this decision is not in line with the theory that the risky mother age (<20 and> 35years) is one of the causes of the IUFD. Thus, the assumption of the researcher is that mother's age is not related to IUFD incidence due to other causal factors such as maternal, fetal and placenta (Gerungan, 2016). However, other factors also play a role in the incidence of IUFD / KJDR, maternal, fetal and placental factors are the causes of IUFD. Maternyahitu factor, maternal age, age of pregnancy and diseases suffered by the mother such as preeclampsia, eclampsia, diabetes mellitus, and KPD. Fetal factors are twin pregnant, congenital abnormalities. Placental factors are umbilical cord, umbilical cord, placental abruption and placenta previa (Gerungan, 2016)

While in mothers with history of malaria, most of 24 (60%) of respondents who did not have history of malaria disease did not experience KJDR (control group). While respondents who have history of malaria disease in

pregnancy mostly 11 (78,6%) experience of KJDR (case group). This cannot be ignored because there are 7 respondents with age at risk of KJDR but after tested with multiple logistic regression that mother age no effect on KJDR events. According Nugroho cause of death of fetus may caused by other diseases like DM in pregnancy, trauma, central or lack of nutrition.

2. Parity

Most of the 27 respondents (75%) were not at risk and did not experience KJDR (control group) events. While respondents who have parity at risk of pregnancy a small part as much as 7 respondents (19,4%) experience of KJDR (case group). In the bivariate test using Chi square test obtained p-value 0.285 (p-value> 0,05) obtained OR = 2.071. So it can be concluded that there is no influence between parity to KJDR events. It cannot be ignored, however, that there is a minority of mothers with parity at risk for CPR. And after a multivariate test with P value> 0.25 so there is no influence between the number of parity mother with the incidence KJDR. This is reinforced by the Gerungan (2013) study that there are other diseases other than malaria disease. This research is not in line with Gerungan 2013.Di know that there is a relationship between parity with the incidence of KJDR with the value of ρ (0.001).

Different studies (Gerungan, 2016) say that there is a significant influence between the diseases that accompany pregnancy to the incidence of IUFD, with p = 0.000, and the presence of illness that accompanies pregnancy has the potential to cause IUFD 7 times.

According to the results of the highest research is 47% hypertension and malaria that causes anemia as much as 21%. As we know that malaria can cause anemia because parasite malaria attacks many red blood cells. As anemia, oxygen supply becomes inadequate which affects the body's metabolism ability, which may have an impact on hypoxia on the placenta tissue causing IUFD (Sulansi, 2013; Rahman, et.,al, 2018)

3. Tribe

As many as 16 respondents (44%) Non-Papuans did not experience KJDR (control group). While the majority of Papuan respondents are 26 respondents (72.2%) experienced KJDR incident (case group). This research is not in line with the reason that 44% of mothers are indigenous Papuans and 56% are migrant communities. This indicates that the non-native Papuans are more susceptible to malaria than the original toddlers (Anonymous, 2011) means that the tribe / race is very influential on the KJDR. Malaria can cause various pathological conditions such as fever, anemia, hypoglycemia, pulmonary udema, failure to cause death. Children cause abortion, preterm labor, low body weight,

and death. In our plural society there are different health problems and different ways of handling because each ethnic / racial / ethnic group has different ways of dealing with malaria disease problems (Pulubuhu, et.,al.,2018).

Immunity against malaria is more determined than the malaria transmission rate in which pregnant women live, which is divided into two broad categories: Stable transmission, or endemic and unstable transmission, epidemic or non-endemic.

CONCLUSION

On the characteristic of mother with malaria age of mother do not risk 20-35 years most in control group is equal to 75%. At test of bivariate got Chi square variable obtained by p-value 0,777 (p-value> 0,05) got OR = 1,381 . So it can be concluded that there is no influence between age to KJDR events. The large number of parities was 27 respondents (75%) parity was not at risk and did not experience KJDR (control group) incidents. While the respondents of the tribe of Papua mostly 26 respondents (72.2%) experienced the incidence of KJDR (case group). At the Chi square test the variable obtained p-value 0.220 (p-value> 0.05) obtained OR = 0.481. So it can be concluded that there is no influence between the tribe against KJDR events. In a multivariate test when yielding p-value <0.25, the independent variable is entered into the multivariate analysis stage. Obtained p value = 0.438 greater than 0.25 so that there is a tribal influence on KJDR events.

SUGGESTION

To support the program from the government requires commitment from all sectors and all lines to work together because malaria is not the responsibility of the health person alone but the responsibility of all parties including the elements of society from top to bottom. Tribe and culture cannot be separated in the community life to deal with health problems. Promote good Promotion and community-based health services, improve cooperation among customary institutions and community organizations, involve religious leaders.

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