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Determinant Factors Affecting Malaria Occurrence among Pregnant Woman in the Wania Puskesmas, District of Mimika

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ABSTRACT

Background: Malaria is one of the most widespread diseases that malaria is still a health problem today. Pregnant women are at twice the risk of infections compared with non-pregnant women. The province of Papua, located in the easternmost part of Indonesia, is a malaria endemic area. Data from Health Office of Mimika Regency 2016 reported malaria incidence as many as 20,292 cases and 326 (1.60%) pregnant women with malaria, 2017 malaria incidence 92,342 cases with API 432.6 / 1000 population and pregnant mother with malaria 335 cases (1.62 %). This shows that the number of malaria sufferers has increased. The number of incidents of malaria in Wania Health Center has increased quite high. In 2015 the number of malaria incidence in pregnant women is 59 cases, 2016 as many as 191 cases and in 2017 as many as 203 cases from 8,391 malaria cases (Profile of Puskesmas Wania, year 2017). The purpose of the study: to determine the determinant factors that affects the incidence of malaria in pregnant women in Puskesmas Wania Health Department of Mimika Regency Papua Province 2018.

Method of research: descriptive analytics with cross sectional study approach. The population studied was all pregnant mothers in the working area of Wania Health Center with a total sample of 100 pregnant women. Data were collected using questionnaire and analyzed using chi square test.

Result of research: there is influence of tribe (p-value = 0,002), job environment (p-value = 0,001), socioeconomic (p-value = 0,005), nutrient status (p-value = 0,001), house distance with breeding place (p-value = 0,002), night activity (p-value = 0,010), distance of house with health service (p-value = 0,001) with malaria incidence in pregnant mother. There is no influence of education (p-value = 0,369), gravida status (p-value = 0,521), use of mosquito net (p-value = 1,000) with malaria incidence in pregnant mother. Maternal nutritional status is the dominant factor for malaria incidence.

Keywords: Factor determinant, malaria pregnant mother.

1. INTRODUCTION

Malaria is a global health problem. This disease is caused by the parasite Plasmodium sp. and transmitted through mosquito bites. The World Malaria Report in 2011 states that malaria is still a disease with a high prevalence rate in 106 tropical and subtropical countries. The impact of malaria on pregnant women can lead to complications such as miscarriage, prematurity, dysmaturity, high neonatal death, anemia during pregnancy and postpartum, second stage labor disturbances, and in the third stage may occur placental retention or uterine atony and infections during childbirth. The estimated incidence of malaria ranges from 250 to 600 million cases, with the number of deaths from malaria reaching one million casualties per year (Lioni, 2012). The World Health Organization (WHO) in Indonesia says that every year there are more than 15,000 maternal deaths and 120,000 fetal deaths due to pregnancy complications from a total of 4,500,000 pregnant women (Lioni, 2012). Malaria disease in Indonesia in 2010 number of positive malaria cases in

Indonesia 465,764 with annual parasite incidence (API) 1,96 per 1,000 population. In 2012, it dropped to 417,819 cases (API 1.69 per 1000 population) (Ministry of Health RI, 2013). The number of malaria cases in Papua is increasing in 2012 there are 489 thousand cases of clinical malaria which in 2011 was only 14 thousand more (3493%). Province with the highest malaria in Indonesia is Papua Province (Ministry of Health RI, 2013). Children and pregnant women are the two groups of people most at risk of malaria infection. Pregnant women are at twice the risk of infections compared with non-pregnant women. Women with first or second pregnancies have a higher risk. Malaria and pregnancy are indeed conditions that worsen each other.

The province of Papua, located in the easternmost part of Indonesia, is a malaria endemic area. Data from Health Office of Mimika Regency 2016 reported malaria incidence as many as 20,292 cases and 326 (1.60%) pregnant women with malaria, 2017 malaria incidence 92,342 cases with API 432.6 / 1000 population and pregnant mother with malaria 335 cases (1.62 %). This shows that the number of malaria sufferers has increased. The number of incidents of malaria in Wania Health Center has increased quite high. In 2015 the number of malaria incidence in pregnant women is 59 cases, 2016 as many as 191 cases and in 2017 as many as 203 cases from 8,391 malaria cases (Profile of Puskesmas Wania, year 2017).

2. MATERIALS AND METHODS

The type of this research is analytical descriptive with cross sectional study design, i.e. variable data taking at one time approach to know correlation between variables studied (Swarjana, 2013).

The population in this study were all pregnant women who visited Wania Health Center.

The number of samples 100 obtained by using the Sovlin formula. Sampling technique based on probability sampling by random sampling is the method of sampling from members of the population by using random regardless of the strata (level) in members of that population. How to retrieve by lottery. Using these techniques, the population has the same opportunity for research (Husein Umar: 1999)

3. RESEARCH RESULT

3.1 The distance of houses from breeding places, the use of mosquito nets, night activities and the distance of houses from health services

Table 1. Distribution of respondents by home distance from breeding place, use of mosquito net, night activities and distance from the health service at Wania Community Health Center in Mimika Regency

No	Variables	n (person)	(%)
1	Distance house from *breeding place*		
	< 500 m	20	20
	≥ 500 m	80	80
	Number	100	100
2	Net use		
	Not	73	73
	Yes	27	27
	Number	100	100
3	Activities at night		
	Yes	29	29
	Not	71	71
	Number	100	100
4	Distance home from health services		
	<250 m	19	19
	≥ 250 m	81	81
Number		100	100

Table 1. shows that most respondents have house spacing from breeding place> 500 m (80%), do not use bed nets (73%), no night activities (71%) and house distance from health services> 250 m (81%).

3.2 Malaria incidence

The incidence of malaria in pregnant women can be seen in the Table below.

Table 2. Distribution of respondents based on the incidence of malaria at Wania Health Center in Mimika Regency

No	Malaria occurrence	n	(%)
1	*Plasmodium* positive	15	15
2	*Plasmodium* negative	85	85
Number		100	100

Table 2. that the incidence of malaria in Puskesmas Wania (15%) with Plasmodium positive and Plasmodium Negative (85%).

3.3 Influence of the tribe with the incidence of malaria

The mother tribes studied are divided into non-Papuan and Papua tribes originating from the local area. For more details can be seen in Table 3 below.

Table 3. Influence of the tribe with the incidence of malaria in pregnant women at Wania Health Center in Mimika Regency

No	Tribe	*Plasmodium* positive		*Plasmodium* negative		Number	
		N	%	n	%	n	%
1	Papua	10	33,3	20	66,7	30	30
2	Non Papua	5	7,1	65	92,9	70	70
Total		15	15	85	85	100	100
p-value = 0,002; RP 4,667; CI 95% (1,743 - 12,492)							

Table 3. shows that respondents with Papuans with positive plasmodium were 10 people (33.3%) and non-Papuans as many as 5 people (7.1%). Chi square test results obtained p-value = 0.002 which stated that there is influence of tribe with the incidence of malaria in pregnant women with value RP 4,667; 95% CI (1.743 - 12.492) which means that pregnant women with Papuan tribe have an opportunity with malaria incidence 4,667 times bigger than pregnant women with non-Papua tribe.

3.4. Effect of education with the incidence of malaria

The lowest maternal education studied was primary and higher education with universities. For more details can be seen in Table 4. below.

Table 4. Effect of education with the incidence of malaria in pregnant women at Wania Health Center in Mimika Regency

No	Education	*Plasmodium* positive		*Plasmodium* negative		Number	
		n	%	n	%	n	%
1	Low	9	19,6	37	80,4	46	100
2	High	6	11,1	48	88,9	54	100
Total		15	15	85	85	100	100
p-value = 0,369; RP 1,76; CI 95% (0,677 - 4,577)							

Table 4. shows that respondents with low education with positive plasmodium were 9 (19.6%) and 6 (11.1%). Chi square test results obtained p-value = 0.369 which stated that there is no effect of education with the incidence of malaria.

3.5. The influence of the work environment with the incidence of malaria

The working environment of mothers working in forest areas and not in forests with malaria incidence can be seen in Table 5 below.

Table 5. The influence of the work environment with the incidence of malaria in pregnant women at Wania Health Center in Mimika Regency

No	Work environment	*Plasmodium* positive		*Plasmodium* negative		Number	
		N	%	n	%	n	%
1	Forest	9	39,1	14	60,9	23	100
2	Non forest	6	78,1	71	92,2	77	100
Total		15	15	85	85	100	100
p-value = 0,001; RP 5,02; CI 95% (1,997 - 12,627)							

Table 5. shows that respondents with the work environment in the forest with positive plasmodium were 9 people (39.1%) and not in the forest as many as 6 people (78.1%). Chi square test results obtained p-value = 0.001 which stated that there are environmental influences of work with the incidence of malaria in pregnant women with a value of RP 5,022; 95% CI (1,997 - 12,627), which means that pregnant women with work environment in the forest have an opportunity with malaria incidence 5,022 times bigger than pregnant woman with environment of work not in forest.

3.6. The socioeconomic effect (monthly pregnancy expenditure) with the incidence of malaria

Socio-economic with the incidence of malaria can be seen in Table 6 below.

Table 6. Socioeconomic Influence with Malaria Incidence in Pregnant Women at Wania Community Health Center in Mimika Regency

No	Socio economy	*Plasmodium* positive		*Plasmodium* negative		Number	
		N	%	n	%	n	%
1	< Rp. 1.079.861	8	36,4	14	63,6	22	100
2	≥ Rp. 1.079.861	7	9	71	91	78	100
Total		15	15	85	85	100	100
p-value = 0,005; RP 4,05; CI 95% (1,652 - 9,939)							

Table 6. shows that respondents with socioeconomic <Rp.1.079. 861 with positive plasmodium of 8 people (36,4%) and> Rp. 1,079,861 as many as 7 people (71%). Chi square test results obtained p-value = 0.005 which stated that there is socio-economic influence with the incidence of malaria in pregnant women with a value of RP 4,052; 95% CI (1,652 - 9,939) which means that pregnant women with social economy <Rp. 1,079,861 have a chance with malaria incidence 4,052 times bigger than pregnant women with social economy> Rp. 1,079,861

3.7. Influence of nutritional status with malaria incidence

Nutritional status with malaria incidence can be seen in Table 7.

Table 7. The influence of nutritional status with the incidence of malaria in pregnant women at Wania Health Center in Mimika Regency

No	Nutrition status	*Plasmodium* positive		*Plasmodium* negative		Number	
		n	%	n	%	N	%
1	Less	10	35,7	18	64,3	28	100
2	Good	5	6,9	67	93,1	72	100
Total		15	15	85	85	100	100
p-value = 0,001; RP 5,14; CI 95% (1,929 - 13,713)							

Table 7. shows that respondents with nutritional status lacked positive plasmodium as many as 10 people (35.7%) and good as many as 5 people (6.9%). Chi square test results obtained p-value = 0.001 which stated that there is influence of nutritional status with the incidence of malaria in pregnant women with value RP 5.143; 95% CI (1,929 - 12,713) means that pregnant women with nutritional status have less chance with malaria incidence 5,143 times than pregnant mother with good nutritional status.

3.8. Effect of gravida status with malaria incidence

The gravida status with the incidence of malaria can be seen in Table 8

Table 8. Influence of gravida status with malaria incidence in pregnant mother at Wania Health Center in Mimika Regency

No	Gravida Status	*Plasmodium* positive		*Plasmodium* negative		Number	
		n	%	n	%	N	%
1	Risks	7	11,1	56	88,9	63	100
2	Not risks	8	21,6	29	78,4	37	100
Total		15	15	85	85	100	100
p-value = 0,258; RP = 0,514; CI 95% (0,203 - 1,302)							

Table 8. shows that respondents with a risk gravida status had a positive plasmodium of 7 people (11.1%) and did not risk as many as 8 people (21.6%). Chi square test results obtained p-value = 0.258 which stated that there is no influence of gravida status with the incidence of malaria in pregnant women.

3.9. Influence of house distance with breeding place with malaria incidence

The effect of house distance with breeding place with malaria incidence can be seen in Table 9 below.

Table 9. Influence of house distance with breeding place with malaria incidence in pregnant women at Wania Health Center in Mimika Regency

No	Distance home from *breeding place*	*Plasmodium* positive		*Plasmodium* negative		Number	
		n	%	n	%	n	%
1	< 500 m	8	40	12	60	20	100
2	≥ 500 m	7	8,8	73	91,3	80	100
Total		15	15	85	85	100	100
p-value = 0,002; RP = 4,57; CI 95% (1,881 - 11,112)							

Table 9. shows that respondents with house spacing with breeding place <500 m have positive plasmodium of 8 people (40%) and> 500 m as many as 7 people (8.8%). Chi square test results obtained p-value = 0.002 which stated that there is influence of the distance of the house with breeding place with the incidence of malaria in pregnant women with value RP 4.571; CI 95% (1,881 - 11,112), which means that pregnant women with distance of house with breeding place <500 m have opportunity with the incidence of malaria equal to 4,571 times compared to pregnant woman with the distance of house with breeding place> 500 m.

3.10. The effect of using mosquito nets with malaria incidence

The effect of using mosquito nets with malaria incidence with the incidence of malaria can be seen in Table 10 below.

Table 10 . The effect of using mosquito nets with malaria incidence in pregnant women at Wania Health Center in Mimika Regency

No	Net use	*Plasmodium* positive		*Plasmodium* negative		Number	
		n	%	n	%	n	%
1	Not	11	15,1	62	84,9	73	100
2	Yes	4	14,8	23	85,2	27	100
Total		15	15	85	85	100	100
p-value = 1,000; RP = 1,01; CI 95% (0,354 - 2,923)							

Table 10. shows that respondents who did not use mosquito net had positive plasmodium of 11 people (15.1%) and used bed nets for 4 people (14.8%). Chi square test results obtained p-value = 1,000 which stated that there is no effect of using mosquito nets with the incidence of malaria in pregnant women.

3.11. Influence of night activities with malaria incidence

The effect of nighttime activities with the incidence of malaria can be seen in Table 11 below.

Table 11. Effect of night activities with malaria incidence in pregnant women at Wania Community Health Center in Mimika Regency

No	Activity at night	*Plasmodium* positive		*Plasmodium* negative		Number	
		n	%	n	%	n	%
1	Yes	9	31	20	69	29	100
2	Not	6	8,5	65	91,5	71	100
Total		15	15	85	85	100	100
p-value = 0,010; RP = 3,67; CI 95% (1,437 – 9,386)							

Table 11. showed that respondents with nighttime activity had a positive plasmodium of 9 people (31%) and not as many as 6 people (8.5%). Chi square test results obtained p-value = 0.010 which stated that there is influence of night activities with the incidence of malaria in pregnant women with a value of RP 3.672; 95% CI (1,437 - 9,386), which means that pregnant women with night activities have an opportunity with malaria incidence of 3,672 times compared to pregnant women who do not perform night activities.

3.12. Influence of house distance with health services with malaria incidence

The effect of house distance with health service with malaria incidence can be seen in Table 12 below.

Table 12. Influence of house distance with health service with malaria incident at Wania Health Center in Mimika Regency

No	Distance home from health service	*Plasmodium* positive		*Plasmodium* negative		Number	
		n	%	n	%	N	
1	< 250 m	8	42,1	11	57,9	19	100
2	≥ 250 m	7	8,6	74	91,4	81	100
Total		15	15	85	85	100	100
p-value = 0,001; RP = 1,87; CI 95% (2,015 – 11,779)							

Table 12 shows that respondents with a house spacing of <250 m with health services had a positive plasmodium of 8 people (42.1%) and> 250 m of 7 people (8.6%). Chi square test results obtained p-value = 0.001 which stated that there is influence of the distance of the house with health services with the incidence of malaria in pregnant women with a value of RP 4.872; 95% CI (2.015 - 11.779), which means that pregnant women with a distance of house with health service <250 m have a chance with malaria incidence 4,872 times bigger than pregnant women with distance of house with health service> 250 m.

3.3. Multivariate Analysis

To find out which factors influenced the incidence of malaria, bivariate analysis was needed and continued on multivariate test.

The results of mutltivariate analysis were obtained on all variables included in the multivariate model of p-value> 0.05, as shown in Table 4:14 below.

Table 13. Analysis of Multiple Logistic Regression Variables

	B	Sig.	Exp (B)	95% C.I. for Exp (B)	
				Lower	Upper
Tribe	0,807	0,401	2,241	0,341	14,724
Work environment	0,651	0,467	1,917	0,332	11,061
Social economy	0,384	0,736	1,467	0,157	13,693
Nutrition status	2,431	0,019	11,372	1,484	87,157
Gravida Status	2,884	0,009	0,056	0,007	0,480
Distance home from *Breeding place*	1,212	0,232	3,359	0,462	24,454
Activity at night	0,800	0,362	2,226	0,399	12,420
Distance home from health service	0,695	0,526	2,005	0,234	17,191
Constant	-5,353	0,008	,005		

Table 13 above, then the dominant factor that influences the incidence of malaria is nutritional status. Based on the model, it can be calculated the probability of nutritional status and gravida status against the incidence of malaria. Based on logistic regression, the dominant factor of malaria incidence in pregnant women is nutritional status and gravid status.

4. DISCUSSION

4.1 Influence of the tribe with the incidence of malaria

The result of this research shows that there is influence of tribe with malaria incidence in pregnant women (p-value = 0,002), that is pregnant woman with tribe of Papua has opportunity with malaria incidence 4,667 times compared with pregnant woman with non Papuan tribe. The results are in line with Sandjaja (2014) study, that the Papuan tribe is more susceptible to malaria than non-Papuans. Harijanto (2012) revealed that some Melanesian races or population groups have a natural immunity to malaria, such as sickle cell anemia and ovalosity (Harijanto, 2012). The results of the study of the relationship caused that generally the tribe of Papua, especially women more often work in the fields so more at risk of Anopheles malaria bites.

Natural immunity between Papuan and Non-Papuan tribes is not known for certain, but according to Harijanto (2012), if a person has long occupied the malaria endemic area more malaria immunity compared with urban residents recently in a region. However, from the results of the study revealed that malaria is more positive in the Papuan (33.3% compared with non-Papuans (7.1%).

This is also expressed from the results of Esther's (2011) study on the ethnic

behavior of Papua against malaria incidence of malaria, caused by the influence of the Papuan culture in a long time as a result of the life of a community together, where there are differences in responding to the interaction of disease. In addition, Papuan cultural activities that hold activities in the evening such as sit-in seats performed from morning to night for several days, other than in other customary activities, making it more susceptible to mosquito bites.

4.2 Effect of education with the incidence of malaria

The results obtained that there is no effect of education with the incidence of malaria (p-value = 0.369). This is because the level of education does not directly affect the incidence of malaria but generally affects the type of work and health behavior of a person. The results of research are in line with Yawan (2006) research, that education does not affect the incidence of malaria this is due to the promotion of malaria prevention has been encouraged by the government in the effort to eliminate malaria in 2030, so that respondents with low and high education know about malaria prevention.

4.3 The influence of the work environment with the incidence of malaria

The result of this research shows that there is work environment influence with malaria incidence in pregnant women (p-value = 0,001) with chance of malaria incidence 5,022 times bigger than pregnant woman with non forest work environment. The results of the study are in line with a study conducted by Babba (2006) that work is at risk for malaria events. The work environment in question is where the working environment of the working profession is done such as fishermen who work at night, farmers working on land or gardens that are breeding place mosquitoes.

A person's educational level can not directly affect the incidence of malaria, but one's education can affect the type of work and level of knowledge of the person. In general a highly educated person will have a more decent job than someone who is lowly educated and will have sufficient knowledge of the problems that occur in the surrounding environment. With sufficient knowledge supported by adequate education will have an impact on one's behavior in taking various actions.

4.4 The socioeconomic effect (expenditure of pregnant women) with the incidence of malaria

The result of the research shows that the socioeconomic of the respondent has an effect on the malaria incidence (p-value = 0,005), that is pregnant woman having expense <RP.1.079.861 risk with malaria incidence 4,052 times bigger than pregnant woman with social economy or expenditure> Rp .1.079.861. The results are in line with Babba (2006); that the expenditure of certain activities, so that this economic status will affect one's knowledge. It has been proved that mothers who during pregnancy suffer from a lack of nutrient-poor food. The condition is due to the economy that is not possible in the fulfillment of food to the maximum. For example, during pregnancy, the mother needs an additional diet of about 50 percent of the usual food consumed, especially egg white, phosphorus lime, iron, and vitamins. Low economics can affect nutritional status and maximal health care, which can affect their health. Conversely, with high economic situation, mothers receive adequate services and better environmental conditions.

4.5 Influence of nutritional status with malaria incidence

The result of this research shows that there is influence of nutritional status with malaria incidence in pregnant women (p-value = 0,001) that pregnant mother with nutrient status have less chance with malaria incidence 2,431 times than pregnant mother with good nutritional status. It is argued that mothers with good nutritional status have

good stamina or health so that naturally increase endurance.

The nutritional status of good pregnant women interacts synergistically with the immune system. The better the nutritional status of a person, the less likely the person is exposed to the disease and the lower the nutritional status of someone more easily the person affected by the disease (Harijanto, 2012). Malaria disease in Papua is still difficult to eradicate. This is related to inadequate environmental arrangement, low economic status of the population, lack of nutritional status, because there are still many people who live with low economic status, thus affecting unhealthy diet (Babba, 2006).

4.6 The influence of gravida status with the incidence of malaria

The results obtained that there is influence gravida status with the incidence of malaria in pregnant women. This is due to the influence of hormones during pregnancy. This is similar to the research of Lioni, 2012 which says that women with first or second pregnancy have a higher risk of suffering from malaria (Lioni, 2012).

4.7 Influence of house distance with breeding place with malaria incidence

The result of this research shows that there is influence of house distance with breeding place with malaria incidence in pregnant women (p-value = 0,002) with malaria incidence 4,571 times compared to pregnant woman with house distance with breeding place> 500 m. This is due to the fact that mosquitoes more than the respondents who have a house distance with breeding place> 500 m, coupled with the state of the house wall or night activities so as to facilitate anopheles mosquitoes infect humans around it. Lefaan (2012) found that risk factor of mosquito breeding place is one of the risk factors of malaria disease, where people whose house is mosquito breeding place have a risk of malaria disease 8.33 times compared with people whose house there is no mosquito breeding place . One of the many breeds that are around the houses is the bushes. In addition, the distance factor where the mosquito breeding to the settlement also affects the incidence of malaria.

According Babba (2006), after being satisfied, mosquitoes will rest in places that are damp, shady, rather dark as in the house on the cloth / shirts used hung, caves, bushes, trenches and others. Most Anopheles mosquitoes will bite at dusk or at night with the peak bite is midnight until dawn.

4.8 Effect of using mosquito nets with malaria incidence

The result showed that there was no effect of using mosquito net with malaria incidence in pregnant women (p-value = 1,000). This is due to the fact that there is no correlation between the use of mosquito nets with malaria incidence due to malaria prevention rather than just using mosquito nets, but can be done with anti-mosquito spray drugs used before bed, so that the presence of dead mosquitoes in the sprayed room. Also supported by the tight wall situation and the use of other anti-malaria such as the use of anti-mosquito cream before bed and the presence of wire netting. The results of this study are in line with the study of Babba (2006) that the use of mosquito net has no effect on malaria incidence that the stronger variables affect the habit of using mosquito net is the installation of wire mesh. So although respondents do not use bed nets while sleeping but ventilation is not installed wire netting thus allowing mosquitoes to enter the house and bite.

4.9 Influence of night activities with malaria incidence

The result showed that there was influence of night activity with malaria incidence in pregnant women (p-value = 0,010) with the chance of malaria incidence 3,672 times compared to pregnant woman by not doing night activities. This is because the malaria mosquito bite schedule often

occurs in the afternoon until evening. So someone who has activities at night are more at risk of infected with malaria caused by Anopheles mosquito bites. Although it has tried to wear a protector such as the use of arm clothes and trousers and anti-mosquito cream, but disuatu saaat activities are negligent or not done.

As with any work in the forest, activities at night are usually done by adults. Therefore only 18-year-olds are analyzed. Activities at night are activities that are at risk of malaria as stated by Sujari (Sujari, 2008). This is in accordance with the behavior of mosquito life that more often find prey at night outside the home than during the day (Sukowati, 2011). However, from the research Sandjaja (2014) as many as 8.7% of research subjects perform activities at night.

4.10 Influence of house distance with health services with malaria incidence

The result showed that respondents with house distance <250 m with health service had positive plasmodium of 8 people (42,1%) and> 250 m counted 7 people (8,6%). Chi square test results obtained p-value = 0.001 which stated that there is influence of the distance of the house with health services with the incidence of malaria in pregnant women with a value of RP 4.872; CI (2,015 - 11,779), which means that pregnant women with a distance of house with health service <250 m have a chance with the incidence of malaria equal to 4,872 times compared to pregnant women with distance of house with health service> 250 m.

The distance home to a health service is considered a risk factor for malaria as revealed by some researchers. The farther away the house to the health service, the higher the incidence of malaria. One way to determine the proximity of a home to a health care place is the time from home to the place of health services. The <30 minute travel time is considered as the distance home to where the health service is close. However, in this study the size of the distance of the house to the health service is divided into <250 m, 250-500 m and> 500 m as stated by Sandjaja (2014) with the result of no effect of the distance of the house with the health service to the malaria incident.

The result of multivariate analysis showed that the determinant factor that influenced the malaria incidence was the nutritional status with probability of malaria occurrence occurring when having the risk factor of nutritional status, i.e. if the nutritional status of pregnant mother is less then pregnant woman will suffer malaria 9%.

5. CONCLUSION

- Based on the results of the discussion can be summarized as follows:
- There is a tribal influence with the incidence of malaria in pregnant women (p-value = 0.002) that pregnant women with Papuan tribes have an opportunity with malaria incidence of 4.667 times compared with pregnant women with non-Papuan tribes.
- There is no effect of education with the incidence of malaria (p-value = 0.369)
- There is an influence of the working environment with the incidence of malaria in pregnant women (p-value = 0.001) that pregnant women with the work environment in the forest have an opportunity with malaria incidence of 5.022 times compared with pregnant women with non-forest work environment.
- There is a socioeconomic effect (monthly pregnancy expenditure) with the incidence of malaria in pregnant women (p-value = 0.005) that pregnant women with socioeconomic (monthly pregnancy expenditure) <Rp.1.079.861 have an opportunity with malaria incidence of 4,052 times compared with pregnant women with socioeconomic (monthly expenditure of pregnant women)> Rp.1.079.861
- There is an influence of nutritional status with the incidence of malaria in

pregnant women (p-value = 0.001) that pregnant women with nutritional status has less chance of malaria incidence 5,143 times than pregnant women with good nutritional status.

- No effect of gravida status with the incidence of malaria in pregnant women (p-value = 0.521)
- There is an effect of house distance with breeding place with malaria incidence (p-value = 0,002) that pregnant woman with distance of house with breeding place <500 m have chance with malaria incidence equal to 4,571 times compared to pregnant woman with house distance with breeding place> 500 m.
- There is no effect of using mosquito net with malaria incidence in pregnant women (p-value = 1,000).The result of chi square test showed that there was influence of night activity with malaria incidence in pregnant women (p-value = 0,010) that pregnant woman with night activity had chance with malaria incidence 3,672 times compared to pregnant mother by not doing activity evening.
- There is influence of house distance with health service with malaria incidence in pregnant woman (p-value = 0,001) that pregnant woman with distance of house with health service <250 m has opportunity with malaria incidence 4,872 times compared to pregnant woman with distance of house with health service > 250 m.
- Maternal nutritional status is the dominant factor for malaria incidence.

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