

## PAIN RELATIONS BETWEEN MALARIA AND WORM INFECTION WITH ANEMIA AT GULF YOUTEFA COMMUNITY IN JAYAPURA CITY YEAR 2016

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### ABSTRACT

*Anemia is still a problem throughout the world. Based on the research results by the World Health Organization in 1993-2005 the prevalence of anemia in women in developing countries approximately 42.3%. The prevalence of anemia in Indonesia year 2013 is estimated for pregnant women (50-70%), the low paid workers (30-40%) and non-pregnant adult women (30-40%). In the Gulf of Youtefa Jayapura according to research by Dr. Hasmi 2014, the proportion anemia totally 30.7%. The research aims to determine the relationship between the history between pain malaria and worm infection with anemia at Gulf Youtefa's community.*

*The research method was observational analytic using cross-sectional study. The study population were people living in the Gulf of Youtefa with a sample totally 94 people. Samples were taken randomly. The research results showed that from 94 people examined were found suffering from anemia as many as 35 people (37.2%) and were not anemia totally 59 people (62.3%) and the prevalence ratio analysis results history between Pain malaria and worm infection with anemia the  $RP = 1,9$  CI 95% (1.18 to 3.2) or interpreted patients who have a history of malaria and worm infection 1.9 times to the risk for having anemia compared with those who did not have a history of pain malaria and worm infection.*

**Keywords:** anemia, malaria, worm infection

### 1. INTRODUCTION

According to the *World Health Organization* (WHO) about a third of the world's population (over 2 billion people) are having anemia. The incidence of anemia in the countries of South Asia is the highest in the world and among the countries of South Asia India is the country with the highest prevalence of anemia (Sinha *et al*, 2012).

Based on the analysis that is supported by the *World Health Organization* (WHO) and the World Bank, "*Global Burden of Disease*," anemia was ranked as the third largest health problem in women aged 15-44 years. (Department of Nutrition and Faculty of Public Health, 2007).

People living in the Gulf Youtefa highly susceptible to anemia, as well as exposure to plumbum also they often came down with malaria and worm infection. In the Gulf of Youtefa Jayapura, according to Hasmi 2014 study found that the proportion of secondary sideroblastic anemia totally 30.7% (Hasmi, 2014).

### 2. METHODS

#### 2.1. Type of research

Observational research using cross sectional approach. The Cross sectional known as the prevalence studies as independent variables (*riskfactors*) and dependent (effect) assessed simultaneously at one time and no *follow-up* (Budiarto, 2002).

**2.2. Population and sample**

a. Population

The population in this study is the whole community in the Gulf of Youtefa, Jayapura.

b. Samples

$$n = z^2_{1-\alpha/2} \left( \frac{p(1-p)}{d^2} \right)$$

Information :

n = Amount of sampel

$z^2_{1-\alpha/2}$  = 1,96 (normal default values based CI 95%,  $\alpha = 0,05$ )

P = The proportion is based on previous research (Malaria 42.7%)

$d^2$  = Absolute proportion value (0,10)

The calculation is as follows.

$$n = z^2_{1-\alpha/2} \left( \frac{p(1-p)}{d^2} \right)$$

$$n = 1,96^2 \left( \frac{0,43(1-0,43)}{0,1^2} \right) = 94$$

The sample in this research is the study population was selected as a research subject.

c. Large sample

The formula for the calculation of sample size *Cross-sectional* studies in this study using the formula Lemeshow, 2007.

Based on the calculation of sample size that has been done, the results obtained sample of at least as many as 94 **people**.

**2.3. Research Instruments**

a. To measure haemoglobin uses NESCO tool *Multi check For In Vitro Diagnostic*

b. For measuring the history of pain malaria and worm infection using a questionnaire.

**3. RESULTS**

Table 1. Distribution of respondents by anemia status, Age, Sex and the history of malaria illness and Helminthiasis at gulf Youtefa community in Papua province, Jayapura City.

Variable	N	%
1. Anemia status		
Anemia	35	37,2
Not having anemia	59	62,3
2. Age		
< 20 years and more > 35	67	71,3
Between 20-35 years	27	28,7
3. Gender		
Men	31	33
Women	63	67
4. History of pain		
Presence	16	17
Absent	78	83

Based on Table 1. It has been seen that from 94 respondents surveyed, 59 respondents were anemia (62.3%) than respondents who are not anemia. By age group, the age group < 20 years and > 35 years is higher that totally 67 (71.3%) compared to the age group 20-35 years. Based

on gender, women were found to suffer more anemia is totally 63 persons (67%) and of the history of pain (malaria and intestinal worms) found more who do not have a history of pain or absent which totally 78 persons (83%).

Table 2. Analysis of Chi Square and Prevalence Rate History of pain (malaria and Helminthiases) with the incidence of anemia at gulf Youtefa Community ,Jayapura, Papua Province.

History of Pain	Rate of Anemia				Total		P Value	RP	95% CI
	Anemia		Not Anemia		N	%			
	N	%	N	%					
Risky	10	62,5	6	37,5	16	100	0,04	1,9	1,18-3,2
Without risk	25	32,1	53	67,9	78	100			
Amount	35	37,2	59	62,8	94	100			

Based on the analysis using the *chi-square* test P value is the value obtained in which the value of P value 0.044 (0.044) is smaller than a predetermined significant level ( $\alpha = 0.05$ ) then  $H_0$  is

accepted. Thus statistically decision could be made that there is a relationship between a history of ill malaria and worm infection (risk) with the incidence of anemia.

*Prevalence Ratio* calculation results (RP) between history ill with anemia obtained a value of 1.9 on a Confidence Interval (CI 95%) obtained a value of 1.18 to 3.2. Thus interpreted that people who have a history of ill malaria and worm infection 1.9 times the risk of anemia against those who had no history of illness malaria and worm infection.

#### 4. DISCUSSION

History of pain in this study are considered at risk if in the last month of respondents had a history of ill malaria and worm infection. The survey results revealed that out of 94 respondents surveyed 16 people who had a known history of pain (malaria and intestinal worms) and note 10 (62.5%) of people who suffer from anemia. Of the 78 people known to have no history of pain, known to 25 (32.7%) were ill anemia and 53 (67.9%) were not anemic. The test results known that the prevalence ratio  $RP = 1.9$  (1.18 to 3.2) or interpreted that people who have a history of pain malaria and worm infection 1.9 times greater risk of anemia than those who had no history of illness malaria and worm infection.

Diseases of malaria infection increases the risk of anemia, because it causes an increase in red blood cell destruction and disruption of erythrocytes (Soripet, 2016). In addition to Malaria, Anemia less iron is influenced also by the consequences of worm infection with chronic blood loss. Interaction between worm infection and anemia have been uncovered from the various studies that have been done. Each is contributing to the occurrence of pain. (Rasmaliah, 2004).

The pathogenesis of anemia due to malaria and worm infection due to a problem iron release from RES (macrophage cells into plasma and infectious diseases cause life span of erythrocytes was so short and the formation of erythropoietin inadequate (Bakta, 2013). Iron is an essential element in maintaining the immune system so not susceptible to disease. According to the study, those people with hemoglobin levels  $<10$  g / dL had higher levels of white blood cells (against bacteria) were also lower. A person can be exposed to anemia due to the increased needs of the body under physiological conditions (pregnancy, blood loss due to accident, post-surgical or menstrual), chronic disease or infection (hookworm, malaria, tuberculosis). Women who are pregnant are very susceptible to infections and infectious diseases (Bakta 2013).

A history of malaria infection with anemia due during malaria infection in humans, red blood cells that are not infected destroyed in the spleen and very probably in the liver, and damage cells, red blood cells have been identified as a major contributor to anemia in malaria ( Tobing, 2013). Mathematical models and clinical observations show that the red blood cells that are not infected 10 times as many will be removed from circulation

for each infected erythrocytes. While only a small direct measurement of red blood cells that survive have been done for infections in humans, a partial reduction of age of erythrocytes normal and of increasing the removal of erythrocytes because the heat has been conducted in patients with malaria, and consistent with this observation (Tubing, 2013).

The incidence of malaria infection in the mother becomes especially actual issues on the eradication of malaria in the world, especially in countries with high malaria endemicity stable. Malaria in pregnancy has a negative impact on the health of the mother and fetus. Malaria contributes into maternal mortality and infant because of a risk / complications in pregnant women. Mentioned 3-15% risk of anemia, low birth weight (LBW) infant mortality 8-14% and 3-8%.

Malaria infection will cause lysis of red blood cells that contain the parasite that would cause hemolytic anemia normokrom. In plasmodium falciparum infection can occur with severe anemia due to all ages erythrocytes can be attacked. Paracites erythrocyte hemolysis or not have paracites suffered because of increased osmotic fragility. It can also be caused by an increase in erythrocyte having paracites autohemolysis good or not having paracites so erythrocyte life span becomes shorter and faster anemia occurs (Tobing, 2013).

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