Dengue Prevention and Correlation between Risk Factors Incidences of Malaria in Waleure Village, Minahasa, Indonesia

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Abstract

Indonesia's is first suspected case of dengue fever found in Surabaya, 1968. In Jakarta, the first case was reported in 1969. In 1994 dengue fever has spread to all provinces in the rural areas. At the beginning of the outbreak in a country, the age distribution of an estimated 50 to 100 million cases of dengue fever per year and 90% in children under the age of 15 years. But in subsequent outbreaks, the number of patients who fall in the age group and young adults also increased. Currently dengue can affect all age groups. Average mortality in dengue cases reach 5%. This research is a descriptive study with cross sectional analytic study. Variables examined the risk factors of malaria ie age, education, employment, environmental knowledge, perceptions, behaviors as independent variables and the incidence of malaria as the dependent variable. The research was conducted in Waleure village, Minahasa, using qualitative rules and measured based on the frequency and percentage. The study was conducted during the first year is the year in December 2011 that in December 2012. Respondents in this study were all villagers Waleure, with the main variable is the way of people's health behavior factors associated with the spread of dengue fever. The final result, most respondents do not understand the healthy life so that mosquitoes can live quest in the area. In addition, lack of education and knowledge of the dangers of dengue diseases cause the absence of the ways to prevent mosquito breeding.

1. INTRODUCTION

A. Background

Malaria is still one of the major public health problem, as it affects the numeric pain babies, toddlers and mothers in labor, and poses extraordinary events (KLB). Total district / city endemic 2004 are 424 from 579 districts / cities, with an approximate percentage of the population who are at risk of contagion as large as 42.4% (Harijanto et al, 2008). Estimated WHO (World Health Organization) there are currently 2.5 billion people live in malaria endemic areas. When this endemic area not tackled effectively and systematically ensured that residents will get a very big risk for malaria plagued, until WHO put man as the main priority in the prevention program and disponsorinya scrutiny.

Malaria is still a major health problem in Indonesia. Almost all regions outside Java and Bali is endemic districts. Most residents in 20 provinces in Indonesia infected with malaria. More than 40 million people live in malarious areas and around 11 million of them live in Java and Bali (Mursito, 2002). In Java and Bali are given priority in the malaria eradication program, malaria transmission level was lowered by means. Currently no less than 20 districts in Java-Bali, 14 of them in Central Java, again showing the level of malaria transmission is high enough (resurgent / reemerging). Data acquired

in 2008 patients with clinical malaria in North Sulawesi 30 856 people of the total population of North Sulawesi, amounting to 2,248,962 people. They are positive in 6348 check blood preparations, consisting of 2036 of Plasmodium falciparum, Plasmodium vivax and Plasmodium mixture of 4108 (mix) 204. The spread of malaria and other factors that influence the society is dynamic interaction between host factors (human and mosquito), agent (parasite) and the environment. Risk factor for the occurrence of the alleged role of malaria infection are age, gender, genetics, pregnancy, nutritional status, activity out of the house at night, winter conditions, social, economic and others.

B. LITERATURE REVIEW

A. Epidemiology of Malaria

According to WHO (World Health Organization), malaria is a leading cause of illness and death worldwide. Around 2.4 billion people at risk of this disease. Malaria is currently endemic in 92 countries, and there on the spread of malaria bag bag in various countries. Worldwide, malaria causes 2 million deaths every year and most of these deaths have occurred in children under five years old. Of all infectious diseases, malaria has always been the biggest cause of the suffering and death of the global disease burden (Martens, 2002).

B. Malaria Risk

Malaria risk is the probability for the malaria that can be calculated well in the short term or the long term. In general, the risk of an individual to suffer from infection is a function of a dose-response relationship in a dose recovered repeatedly from the probability of exposure. This concept is based on several factors such as the vector population, the probability of becoming infectious vectors, the existence and prevalence of the sample transmission (men who have been infected) in the population, the probability of an infective bite, level of immunity in the population and the effectiveness of malaria prevention strategies used in place that.

C. Handling Malaria

Malaria control program in Indonesia is divided into several periods, namely: the period up to 1952 was the period of malaria eradication without the use of insecticides, the period 1952-1959 was the period of eradication of malaria by using insecticide, the period 1959-1968 was the period in which the malaria eradication of malaria eradication of malaria patients intended obviate and 1968 to the present period is the period of malaria eradication aimed at lowering the amount of malaria patients to malaria is not a major health problem again (Myrnawati, 2000).

D. Treatment of malaria

Malaria treatment in general purpose is to reduce pain, prevent death, cure patients and reduce losses due to illness. Medicine also has a role to prevent the possibility of an outbreak of malaria suffering to other healthy people. Timely and effective treatment is most cost-effective wide to handle the malaria.

E. Malaria Risk Factors

According to Last as quoted by Murti (2003), among others, the risk factors for behavioral, lifestyle, display environment (physical, biological, social, cultural), congenital or hereditary characteristics based on the evidence known to epidemiologists have contacted the disease or condition health, so it's important to do prevention. Risk factors originating from within the organism (intrinsic risk

factors) are the level of individual susceptibility to a disease.

F. Individual demographic characteristics

Several studies indicate that prevalence differences by age and sex is actually related to immunity level due to variations keterpapaparan mosquito puncture (Mynarwati, 2000). Mauny (2004) in a study in Madagascar in 1995 showed that age in relation to the occurrence of malaria infection. Predikator age children are significant for recurrence density parasitemia (Mc.Elroy, 1997). Infant / neonatal, elderly (> 70 years), pregnancy or post birth is supporting factors, the occurrence of malaria (Sutisna, 2004).

G. Knowledge, Attitudes and Individual Behavior

Honrado (2003), provides the results of a study on the risk factors of knowledge, attitudes, and behavior relating to malaria in Southeast Asia, particularly in Indonesia, Malaysia, Philippines and Thailand. Community perception of malaria in an area is pretty important factor. When malaria is considered to be a need (demand) to overcome, the effort to make healthy environment will be implemented community spontaneously (Anonymous, 1999).

C. RESEARCH MODE ANALYSIS

This kind of research is descriptive analytic study using cross-sectional study approach. Population in this study is that all communities in the Village Waleure, Minahasa, Indonesia locations during the study progresses.

1. Study sample

Study sample is all that is allegedly infected with malaria community for research done. The sample is done by simple random sampling inklusinya criteria namely respondents aged > 12 years or older, able to read and write, be prepared to follow in the study. Number of samples involved in this study totaled 152 respondents.

2. Research instruments

Instrument in the form of a questionnaire study is passed the test validity and reliability with Alpha Cronbachs method. Validity and reliability of the questionnaire performed four variables namely knowledge, environment, perception and behavior. Questionnaire to measure individual knowledge about malaria consists of 10 items query.

D. ANALYSIS.

a. Age Description. Distribution of respondents by age group can be seen in Table 1 below.

Table 1. Distribution by Age Group

Age	N	Percentage (%)
≤ 38 years	78	51,3
> 38 years	74	48,7
Total	152	100

Table 1 above shows that the majority of respondents, 78 respondents (51.3%) distributed in the age group ≤ 38 years, and 74 respondents (48.7%) distributed in the age group> 38 years.

b. Knowledge description. Distribution of respondents by knowledge can be seen in Table 2 below.

Table 2. Ditribution by Knowledge

Knowledge	N	Percentage (%)
Good	82	53,9
Not good	70	46,1
Total	152	100

Based on the distribution of respondents by knowledge as shown by Table 2 above, it can be seen that most of the respondents are knowledgeable both by 82 respondents (53.9%) and respondents were either not knowledgeable as many as 70 respondents (46.1%).

c. Environmental picture. Distribution of respondents according to the environment can be seen in Table 3 below.

Table 3. Distribution According to the Environment

Environment	N	Percentage (%)
No have	43	28,29
Have	109	71,71
Total	152	100

From Table 3 above it can be seen that the majority of respondents, 144 respondents (94.7%) responded that they live in an environment that exist or may cause the incidence of malaria and only 8 respondents (5.3%) who responded were not in an environment that can cause malaria.

d. Perception description. Distribution of the respondents according to perception can be seen in Table 4 below.

Table 4. According to the distribution of Perception

Perception	N	Percentage (%)
No have	16	10,5
Have	136	89,5
Total	152	100

Based on the distribution of the respondents according to perception about things related to malaria, the majority of respondents, 136 respondents (89.5%) responded that they know things related to malaria and just 16 respondents (10.5%) were not have the perception about things related to malaria.

e. Behavior description. Distribution of respondents according to the behavior can be seen in Table 5 below.

Table 5. Distribution by Behavior

Behavior	N	Percentage (%)
No have	74	48,7
Have	78	51,3
Total	152	100

Table 5 above shows that the number of respondents who have behavior and not associated with the likelihood of malaria is almost as large, ie 78 respondents (51.3%) exhibit behavior associated with the likelihood of

malaria and 74 respondents (48.7%) does not have the behavior associated with the chances of developing the disease malaria.

f. Relationship between respondent characteristics and the incidence of malaria in this section will be examined in cross tabulation relationship between respondent characteristics and the incidence of malaria. The bivariate relationship studied using Chi-Square test.

g. The relationship between age and the incidence of malaria. Distribution of relationship between age and the incidence of malaria can be seen in Table 6 below.

Table 6. The relationship between age and the incidence of malaria

Age	Malaria				P Value	Note
	Yes		No			
	n	%	n	%		
≤ 38 year	34	22	44	29	> 0,05	There is no relationship
> 38 year	26	17	48	32		
Total	60	39,5	92	60,5		

At 6 in the above table it can be seen that most of the respondents were aged ≤ 38 years were positive malaria as many as 34 respondents (22%) and a negative malaria by 44 respondents (29%). Respondents were aged > 38 years who received a positive malaria as many as 26 respondents (17%) and 48 respondents (32%) negative malaria.

The relationship between age and the incidence of malaria can be seen in Figure 1 below.

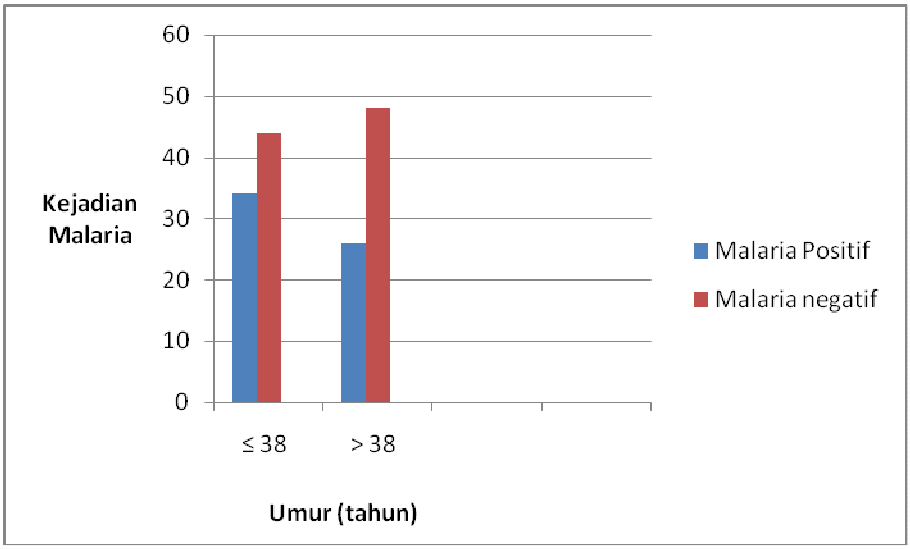

Figure 1. The relationship between age and the incidence of malaria

Based on the results of Chi-Square analysis at a significance level of 95% or the value of α = 0.05, the value Asymp.Sig. (2 sided) of 0.286. If the value Asymp.Sig. (2-sided) is greater than the value of α = 0.05 means that Ho is accepted or not there is a relationship between age and the incidence of malaria. Most of the incidences of malaria on

all existing are educational strata except respondents who graduated college. Consecutive positive malaria incidence ranging from the largest, namely junior high school graduates 27 respondents (17.76%), primary school graduates by 20 respondents (13.16%), high school graduates were 12 respondents (7.89%), not graduated from elementary 1 respondent (0.66%) and degree as much as 0 respondents (0%). Respondents with a negative malaria row that high school graduates are 34 respondents (22.37%), junior high school graduates by 27 respondents (17.76%), primary school graduates by 16 respondents (10.53%), degree graduates were 12 respondents (7.89%), did not graduate from elementary 3 respondents (1.97%). The relationship between education and the incidence of malaria can be seen in Figure 4 below.

Based on the results of Chi-Square analysis at a significance level of 95% or the value of α = 0.05, the value Asymp.Sig. (2 sided) of 0.001. If the value Asymp.Sig. (2-sided) is smaller than the value of α = 0.05 means that Ho is rejected or there is a significant relationship between education and the incidence of malaria.

h. The relationship between the work and the incidence of malaria. Distribution of relationship between the work and the incidence of malaria can be seen in Table 7 below.

Table 7. Relationship between the work and the incidence of malaria

Work	Malaria				Value P	Note
	Yes		No			
	n	%	n	%		
Farmer	33	21,71	37	24,34	< 0,05	There is have relationship
Labor	2	1,31	5	3,29		
Goverment/Police/Army	2	1,31	17	11,18		
swasta	6	3,95	17	11,18		
Unemployment	17	11,18	16	10,53		
Total	60	39,46	92	60,52		

Table 7 above shows that the farmers occupied the first rank who got malaria positive as many as 33 respondents (21.71%), followed in succession by those who do not work as many as 17 respondents (11.18%), self-employed as 6 respondents (3 , 95%), as well as labor and goverment / police / TNI respectively 2 respondents (1.31%). Respondents with a negative malaria row that farmers as much as 37 respondents (24.34%), self-employed and goverment / police / TNI respectively by 17 respondents (11.18%), do not work as many as 16 respondents (10.53%) and workers by 5 respondents (3.29%).

The relationship between the work and the incidence of malaria can be seen in Figure 2 below.

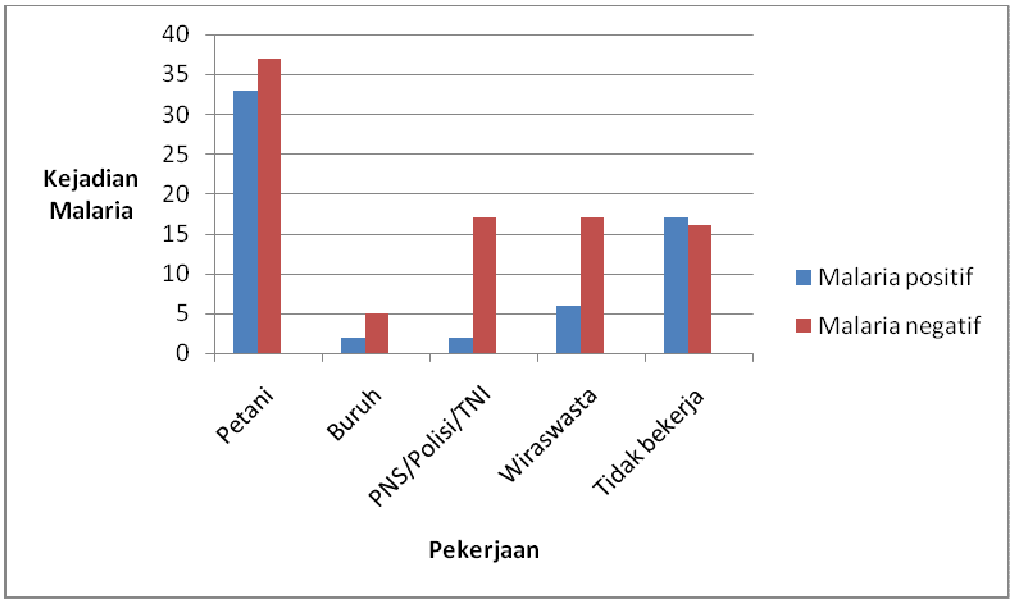

Figure 2. The relationship between the work and the incidence of malaria

Based on the results of Chi-Square analysis at a significance level of 95% or the value of α = 0.05, the value Asymp.Sig. (2 sided) of 0.014. If the value Asymp.Sig. (2-sided) is smaller than the value of α = 0.05 means that Ho is rejected or there is a significant relationship between work and the incidence of malaria.

i. The relationship between knowledge and the incidence of malaria. Distribution of knowledge and the relationship between the incidences of malaria can be seen in Table 8 below.

Table 8. The relationship between knowledge and the incidence of malaria

knowledge	Malaria				P Value	Note
	Yes		No			
	n	%	n	%		
Good	18	11,84	64	42,10	< 0,05	There is relationship
Not good	42	27,63	28	18,42		
Total	60	39,47	92	60,52		

Table 8 above, we can see that respondents with a good level of knowledge of malaria positive experience as many as 18 respondents (11.84%) and negative malaria by 64 respondents (42.10%). Respondents with no knowledge of either are having positive malaria by 42 respondents (27.63%) and negative malaria by 28 respondents (18.42%). The relationship between knowledge and the incidence of malaria can be seen in Figure 3 below.

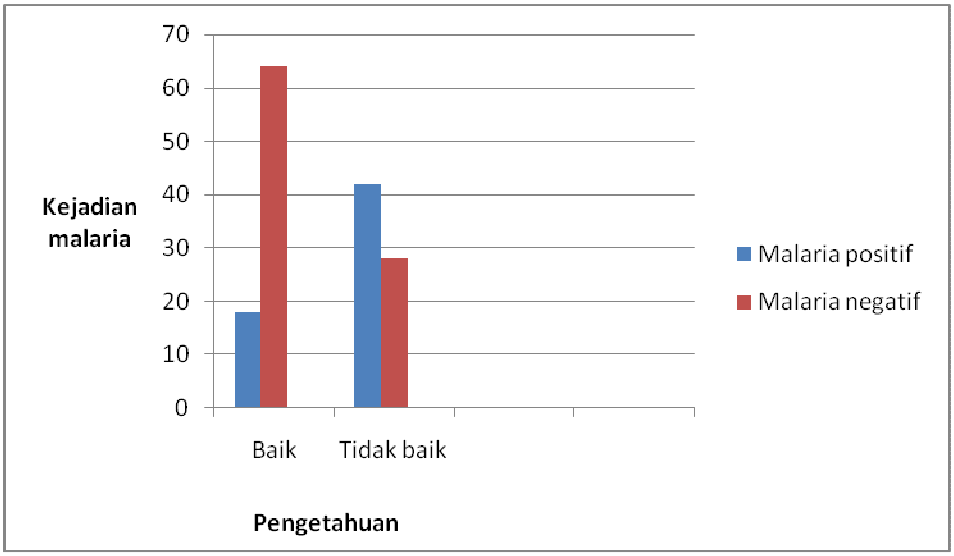

Figure 3. The relationship between knowledge and the incidence of malaria

Based on the results of Chi-Square analysis at a significance level of 95% or the value of α = 0.05, the value Asymp.Sig. (2 sided) of 0.000. If the value Asymp.Sig. (2-sided) is smaller than the value of α = 0.05 means that Ho is rejected or there is a significant relationship between knowledge and the incidence of malaria.

j. The relationship between the environment and the incidence of malaria. Distribution of relationship between the environment and the incidence of malaria can be seen in Table 9 below.

Table 9. The relationship between the environment and the incidence of malaria

Environment	Malaria				P Value	Note
	Yes		No			
	n	%	n	%		
No have	6	3,95	37	24,34	< 0,05	There is relationship
Have	54	35,53	55	36,18		
Total	60	39,48	92	60,52		

Table 9 above shows the incidence of malaria in the absence of the environment with the possibility of malaria incidence in malaria positive respondents with as many as 6 respondents (3.95%) and environmental / support the possibility of malaria incidence by 54 respondents (35, 53%). Among respondents with negative malaria, 37 respondents (24.34%) are not within the realm of the possible emergence of malaria and 55 respondents (36.18%) is in an environment that allows the malaria incidence.

The relationship between the environment and the incidence of malaria can be seen in Figure 4 below.

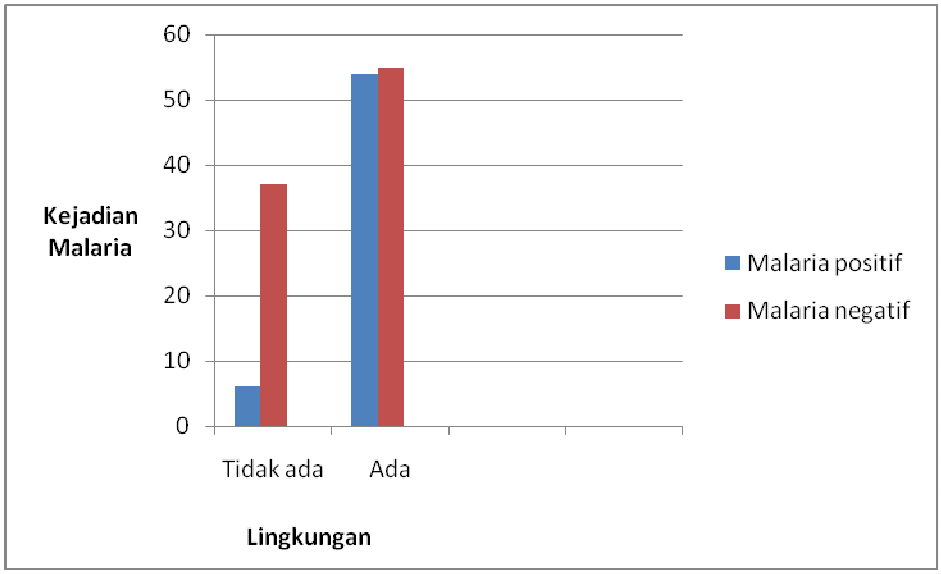

Figure 4. The relationship between the environment and the incidence of malaria

Based on the results of Chi-Square analysis at a significance level of 95% or the value of α = 0.05, the value Asymp.Sig. (2 sided) of 0.000. If the value Asymp.Sig. (2-sided) is smaller than the value of α = 0.05 means that Ho is rejected or there is a significant relationship between the environment and the incidence of malaria.

k. Relationship between perception and incidence of malaria. Distribution of relationship between perception and incidence of malaria can be seen in Table 10 below.

Table 10. The relationship between perception and incidence of malaria

Perception	Malaria				P Value	Note
	Yes		No			
	n	%	n	%		
No have	11	7,24	5	3,28	< 0,05	There is relationship
Have	49	32,24	87	57,24		
Total	60	39,48	92	60,52		

From Table 10 above it can be seen that respondents who do not have the perception of positive malaria incidence of malaria by as many as 11 respondents (7.24%) and the perception of malaria by 49 respondents (32.24%). Respondents with negative malaria which are not have the perception of malaria incidence by 5 respondents (3.28%) and the perception of malaria by 87 respondents (57.24%).

Relationship between perception and incidence of malaria can be seen in Figure 5 below.

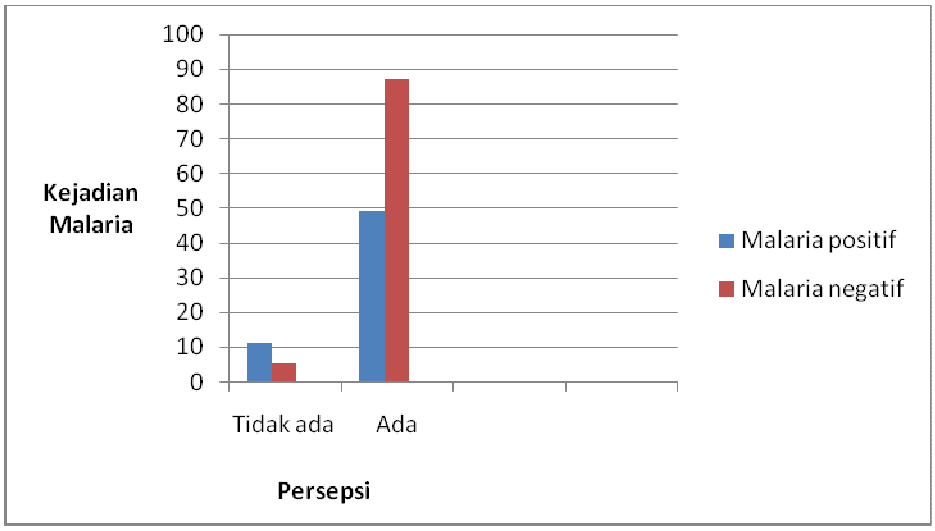

Figure 5. Relationship between perception and incidence of malaria

Based on the results of Chi-Square analysis at a significance level of 95% or the value of α = 0.05, the value Asymp.Sig. (2 sided) of 0.011. If the value Asymp. Sig. (2-sided) is smaller than the value of α = 0.05 means that Ho is rejected or there is a significant relationship between the environment and the incidence of malaria.

l. The relationship between behavior and the incidence of malaria. Distribution of relationship between behavior and the incidence of malaria can be seen in Table 11 below.

Table 11. Relationship between behavior and the incidence of malaria

Behavior	Malaria				P Value	Note
	Yes		No			
	n	%	n	%		
No have	43	28,29	31	20,39	< 0,05	There is relationship
Have	17	11,18	61	40,13		
Total	60	39,47	92	60,52		

From the table above it can be seen 11 respondents who did not have behavior associated with malaria occurrence with malaria positive that as many as 43 respondents (28.29%) and who have behaviors associated with the incidence of malaria by 17 respondents (11.18%). Respondents with negative malaria which does not have a behavior that is associated with the incidence of malaria by 31 respondents (20.39%) and who have behaviors associated with the incidence of malaria as many as 61 respondents (40.13%).

The relationship between behavior and the incidence of malaria can be seen in Figure 6 below.

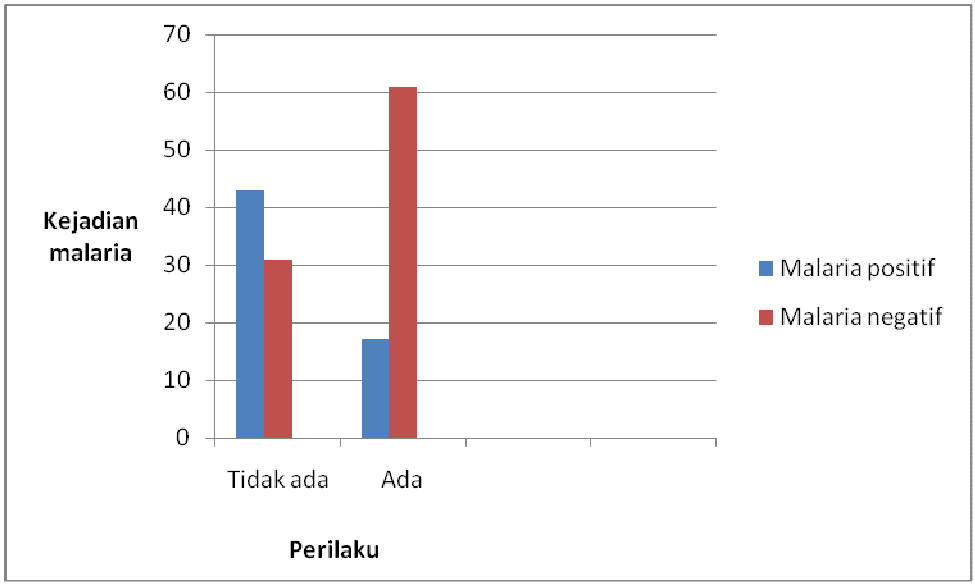

Figure 6. Relationship between behavior and the incidence of malaria

Based on the results of Chi-Square analysis at a significance level of 95% or the value of α = 0.05, the value Asymp.Sig. (2 sided) of 0.000. If the value Asymp.Sig. (2-sided) is smaller than the value of α = 0.05 means that Ho. is rejected or there is a significant relationship between the environment and the incidence of malaria.

E. CONCLUSION

After conducting this study it can be concluded that:

a. There is no significant relationship between age, sex with the incidence of malaria in Waleure village, Minahasa, Indonesia.
b. There is a significant relationship between education, employment, knowledge, environment, perception and behavior with the incidence of malaria in Waleure village, Minahasa, Indonesia. Thus, the influence of knowledge, level of education and perceptions of behavior will determine the incidence of malaria in Waleure village, Minahasa. The higher the level of knowledge will get better handling.
c. Improve malaria prevention activities that related to the existence of mutual aid cleaning mosquito breeding places around the household, rice fields, and stagnant water.
d. Community leaders and religious leaders can enhance its role as a driver of prevention and eradication of malaria in the village.

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