

The Relationships of Mosquito Habitat Existence and Patients Personal Protection of Malaria in District Merlung Tanjabbar Work Health Area in 2013

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Abstract

One of infectious diseases in all developing countries is malaria. Malaria is an infectious disease caused by Plasmodium parasites that live and breed in human red blood cells. The spread of malaria caused by the persistence of the parasite as a source and as an intermediary Anopheles malaria transmission; changes in uncontrolled environments, the high mobility of the population of the region endemic and endemic areas; unhealthy people's behavior; limited access to health care one of them due Community Resources (HR) are not sufficient numbers of health, research objectives Knowing relationship where mosquito habitat and individual protection measures with the incidence of malaria in Puskesmas Merlung 2013. Cross-sectional design of a study in which the independent variables affect the dependent variables observed simultaneously at the same time, the population of the entire number as many as 15 331 households, a sample of 99 families with a simple random sampling technique sampling. Based on the research results There is a relationship between the presence of the incidence of malaria mosquito habitats in Puskesmas Merlung District of Tanjabbar in 2013, with p value $0.012 < (p = 0.05)$. There is a relationship between the protection of individuals with malaria incidence in Puskesmas Merlung in 2013, with a p value of $0.004 < (p = 0.05)$. Expected Conduct counseling about malaria as the cause of malaria, malaria symptoms, prevention of malaria and so forth, coordinate the health worker to perform Anopheles mosquito eradication efforts, health center staff in cooperation with the environment and public health workers in mosquito eradication activities, such as hoarding puddles, clean the bushes and grass around the house.

Keywords: Mosquito Habitat existence, Personal Protection with Genesis Malaria

1. INTRODUCTION

Infectious disease is a disease that is transmitted through a variety of media. This disease is a major health problem in almost all developing countries because of morbidity and death are relatively high in a relatively short time. Infectious disease is a result of a combination of various factors that influence each other. These factors are the environment (environment), the causative agent of the disease (agent), and the host.

One of infectious diseases in all developing countries is malaria. Malaria is an infectious disease caused by Plasmodium parasites that live and breed in human red blood cells. The disease is naturally transmitted by the bite of Anopheles mosquitoes. Malaria can cause death, especially in high-risk groups ie infants, toddlers, pregnant women, in addition to the direct malaria causes anemia and can reduce labor productivity.

Malaria is found in almost all parts of the world, especially in countries in tropical and subtropics. Population at risk of malaria amounted to about 2.3 billion or 41% of the total world population. Each year, malaria cases amounted to about 300-500 million cases and resulted in 1.5 to 2.7 million deaths, especially in Africa continent. Malaria remains a public health problem in Indonesia due to morbidity and mortality is still high, especially in areas outside Java and Bali (Widoyono, 2011: 157). Indonesia as a tropical country, including countries that are vulnerable to malaria transmission. Of the total 495 districts, as many as 396 districts (80%) is still a malaria endemic area is also estimated 45% of Indonesia's population at risk of contracting malaria.

The spread of malaria caused by: the persistence of the parasite as a source and as an intermediary Anopheles malaria transmission; changes in uncontrolled environments, the high mobility of the population of the area is not endemic and endemic areas; Behavior unhealthy society; limited access to health care one of them due Community Resources (HR) health are not sufficient in number.

Efforts to suppress the morbidity and mortality is done through malaria5 eradication program. Malaria is still common, especially in areas that environmental change, say shrimp or fish that is not maintained, cutting mangroves for fuel and charcoal, which clogged the river estuary that would be malaria mosquito breeding places.

Malaria is found in Jambi including malaria-endemic areas, particularly in the District of Tanjabbar incidence of malaria is always an increase in malaria morbidity which is determined by the incidence of malaria in the 1000 population, known as Annual Malaria Incidences (AMI)/ 1000 population. Cases of malaria in the District of Tanjabbar the bulk occurs in Tungkal District of Ulu and Merlung and sub district in part Betara, it is

associated with the topography of the area where the second comparison districts are that most of its territory is composed of forests (Industrial plant) and puddle swamp.

Based on data from 11 districts in the province of Jambi shows morbidity and morbidity, both incident and prevalent of a disease incidence of malaria illustrates that malaria cases in the District of Tanjabbar west is the highest among the other districts the AMI of 24, 81, followed by the Eastern District of Tanjabbar AMI of 22.10, while the third is the number of Muara Jambi AMI of 21.24.

Based on data from the District Health Office Tanjabbar cases of malaria from 16 health centers in the District of Tanjabbar in 2013, where there are 913 high malaria incidence in PHC Merlung whereas the lowest incidence is in the region of the first health center which is the second occurrence of malaria.

Based Puskesmas Merlung is one area that is experiencing change environment where previously there are many forests, but when this happens so that the clearing of forests to plantations. The affect of mosquito breeding places, such as puddles, swamps and an excavated hole in the neighborhood community. Many communities that have activities at night to fulfill their daily needs such as overnight in a field, then in addition to the many lands that were flooded from the formation or land clearing.

Merlung community has good behavior in the prevention of malaria incidence them are still many people who still do not use mosquito nets, especially people who have activities outside the home is rarely used as a deterrent not to contact with mosquitoes that can be covered with used clothing of the whole body so as to minimize the occurrence of mosquito bites.

2. RESEARCH METHODS

The research looked at whether there is a relationship where mosquito habitats and the protection of individuals with malaria incidence in Puskesmas Merlung District of Tanjabbar year 2013. This study is a descriptive analytic study with cross sectional design of a study conducted with the aim of looking at the relationship description of a situation objectively conducted at that time by observation / data collection is done once in a while. The study was conducted to see relationships where mosquito habitat and individual protection measures with the incidence of malaria in Puskesmas Merlung District of Tanjabbar In 2013, with the collection of primary data through interviews using a questionnaire. The population in this study were all heads of families in Puskesmas Merlung. Total population 15 331 respondents and a sample of 99 respondents. The sampling technique is done with a simple method of sampling random.

3. RESULTS AND DISCUSSION

3.1. Relationship between the presence of Habitat Mosquitoes With the incidence of malaria in Puskesmas Merlung District Tanjabbar Year 2013

Results of the study found that the incidence of malaria in Puskesmas Merlung Tanjabbar District in 2013 can be seen in the following table 1.

Table 1. Relationship between the presences of Habitat Mosquitoes With the incidence of malaria in Puskesmas Merlung District Tanjabbar Year 2013

No	Mosquito Habitate	Malaria Accident				Σ		P - Value
		Malaria		Non Malaria		N	%	
		n	%	n	%			
1	Positive	7	38,9	11	61,1	18	100	0,007
2	Negative	10	12,3	71	87,7	81	100	
Total		17	17,2	82	82,8	99	100	

The results of the analysis of Table 1 shows that of the 81 respondents who discovered the existence of mosquito habitat there are as many as 10 respondents (12.3%) suffered from malaria and a total of 18 respondents were not found mosquito habitats where there are as many as seven respondents (38.9%) suffered from malaria.

The results of the statistical test Chi Square values obtained p - value of 0.007 (p <0.05) so that it can be concluded that there is a relationship between the presence of the incidence of malaria mosquito habitats. Based on the results showed that the majority of respondents who do not suffer from malaria but still found a habitat mosquito habitats where from 17 to 13 habitats found in the yard of residence of respondents, while the fourth place is not found in mosquito habitats around the yard respondents in the trenches rice fields, estuaries, lakes, reservoirs and fields.

Mosquito breeding places are generally called "Breeding place" or "breeding site". In principle Anopheles mosquitoes will lay their eggs in standing water in a clean and not polluted, just taste breeding sites of each species are not the same. For example, Anopheles larvae can be found in freshwater and brackish water marshes, mangrove swamps (mangrove), fields, grass-covered ditch, on the banks of the river, as well as stagnant water (temporarily) due to rain. Most species prefer habitats that existing vegetation, although some are not. No vote puddles open with full sun, while others choose sheltered places in the forests. There are also

several species of larvae we get in holes in trees and axillary.

Malaria is an infectious disease caused by parasites of the genus *Plasmodium*, which can be transmitted through the bite of *Anopheles* mosquitoes. The term derives from two words malaria Italian language, namely *mal* (bad) and *aria* (air) or bad air because once numerous in the swamps that emit a foul odor. Malaria also has several other names, such as roma fever, swamps fever, tropical fever, beach fever, charges fever, turtles fever, and paludisme.

The results are consistent with studies in the district of Medan struggle to get that mosquito most commonly found are tanks / storage of water which is 5 times more wiggler, then water reservoirs are not like, junk around the house and dug each - each 1 times more. Furthermore habits enough to hang clothes also a habitat for mosquito breeding.

The spread of malaria depends on the interaction between the agent, host and environment. Environmental factors (habitat for mosquitoes) are generally very dominant as a determinant of malaria transmission in an area. Environment highly preferred if the mosquito is the physical environment and biological environment and are not maintained around the house. When setting or maintenance of good living environment then malaria transmission does not occur quickly or endemic.

As infectious diseases, malaria can move from one area to another through the movement of the population as a source of infection. Malaria mosquito flight distance easily move from one place to another without regard to boundaries. In the prevention and control of malaria in the working area required Puskesmas Merlung picture mosquito habitat and transmission. The main thing that needs to be understood to control malaria mosquitoes is an understanding of the eradication of mosquito breeding, in which environmental factors play a role in reproduction. Therefore we need cooperation among citizens in preserving the environment of habitat mosquitoes as vectors of malaria.

The results of the Chi Square test statistic obtained p-value of 0.007 ($p < 0.05$) so that it can be concluded that there is a relationship between the presence of the incidence of malaria mosquito habitats, this can happen because the respondents did *Anopheles* mosquito eradication, such as stockpiling puddle, cleaning brush and grass around the home, the community does not know where any of *Anopheles* mosquito breeding places so much discovered the existence of mosquito habitats at risk and could be vulnerable respondents suffering from malaria. Means that the risk of the presence of habitats of *Anopheles* more incidence of malaria. this is due to other factors that influence the respondents so that the respondent was not suffering from malaria, such as good endurance, strong and respondents more activity in the house at night. This is clear because the head of the family has been doing mosquito eradication of malaria in order to reduce the mosquito *Anopheles* breeding sites and respondents are not frequent activities outside the home at night.

The results of the analysis in Table 4.6 shows that of the 81 respondents who discovered the existence of mosquito habitat there are as many as 10 respondents (12.3%) suffered from malaria and a total of 18 respondents were not found mosquito habitats where there are as many as seven respondents (38.9%) suffered from malaria.

According to research in line with a recent study states that there is a relationship between the presences of the incidence of malaria mosquito habitats. In this study, many found the existence of mosquito habitats, as much as 64.9% or 61 respondents who discovered the existence of mosquito habitats at risk while as many as 35.1% or 33 respondents who discovered the existence of mosquito habitats that are less risky. At the time of the study, many found a breeding ground for malaria mosquitoes in the area villages Recognize Acid down Jambi. Some of them are rain puddles in contact with the ground, many found an abandoned fish pond, an excavated hole stagnant water, sewerage are not maintained, the open sewage disposal, bushes around the house, lawn around the house, hanging fabric, and cattle were not clean and there were puddles. This can be a *Anopheles* mosquito breeding.

Place mosquito habitats most widely found in Puskesmas Merlung is fabric hanging at home, swamps, puddles of rain water in contact with the ground being around homes, drains were poorly maintained and the grass around the house residents. This can be a malaria vector breeding so that incidence of malaria is high. Habitat mosquitoes or mosquito residence is an area where there is room to breed, their preferred host and a place to rest. Movement cycle of mosquito breeding ground to where the host and then to rest and then to a breeding ground again, always repeated during the lifetime of the female mosquito, the process is called a cycle geotropic.

One of the malaria mosquito breeding grounds is a puddle of water in contact with the ground is temporary or permanent waterlogging, which consists of fresh or brackish water, swamps, bushes, grass around homes and puddles while that puddles of rainwater especially rainwater which is in contact with the ground. Efforts should be made to prevent and reduce mosquito breeding places in habitats that are found can be done by landfill puddle, drain stagnant water, clean the grass around the house, cleaning the bushes around the house, making sewerage maintained and closed. Besides making a closed sewage disposal. Eradication of malaria mosquito larvae and adults can be done by spraying houses in malaria-endemic areas with insecticide. So people

should be assisted by the efforts of the joint mutual cooperation in combating breeding sites or resting places of Anopheles.

3.2. Relationship of Individual Protection With malaria incidence.

Table 2. Relationship Presence Habitat Mosquitoes With malaria incidence in Puskesmas Merlung District Tanjabbar Year 2013

No	Individual protection	Malaria Accident				Σ		P - Value
		Malaria		No Malaria				
		n	%	N	%	N	%	
1	Use	14	27,5	37	72,5	51	100	0,005
2	No Use	3	6,3	45	93,8	48	100	
Total		17	17,2	82	82,8	99	100	

The results of the analysis of Table 2 shows that of the 51 respondents who did not wear personal protection there are a total of 14 respondents (27.5%) suffered from malaria and 48 respondents who wear personal protection there are as many as 45 respondents (93.8%) do not suffer from malaria.

The results of the statistical test Chi Square values obtained p - value of 0.005 ($p < 0.05$) so that it can be concluded that there is a relationship between the protection of individuals with the incidence of malaria. The results of the analysis in Table 4.7 shows that of the 51 respondents who did not wear personal protection there are a total of 14 respondents (27.5%) suffered from malaria and 48 respondents who wear personal protection there are as many as 45 respondents (93.8%) do not suffer from malaria.

The results of the Chi Square test statistic obtained p-value of 0.005 ($p < 0.05$) so that it can be concluded that there is a relationship between the protection of individuals with the incidence of malaria. The results showed that the majority of respondents who suffer from malaria did not do an adequate self-protection measures such as not using a mosquito net at night, do not use anti-mosquito and often out of the house at night. Respondents who are not exposed to malaria generally perform well self-protection measures.

Individual protection is an effort to avoid bites someone Arthropod as prevention of transmission of the disease or that do not suck blood Arthropod and prevent other consequences. This can be done by wearing clothes that cover the body, canopy bed and using insect repellent substances (insect repellent) on exposed body. The most effective use of mosquito nets if users really are under a mosquito net from midnight until dawn when mosquitoes are usually suck blood. Based on the fact that the nets could act as a barrier between mosquitoes to humans, mosquitoes cannot touch directly on humans. Using long pants and long sleeves to reduce contact with mosquitoes, especially at times of dusk and night. The use of anti-mosquito cream is also a good prevention against mosquito bites.

The results are consistent with studies obtain results OR (odds ratio) to use mosquito nets were 4.53 (95% CI 2.31 to 8.90), after controlling for variables that use of anti-mosquito OR 5.00 (95% CI 2.44 to 10.25), and after controlling for variables when out of the house at night to wear closed OR = 4.19 (95% CI 1.82 to 9.64), then controlled by the variable no mosquito breeding places OR = 1.96 (95% CI 0.77 to 4.95). This means that all efforts to protect themselves against mosquito bites respondent has a significant relationship to malaria transmission. However the counseling by health center staff about personal protection from mosquito bites, still needs to be done in order to support the malaria eradication program, and dissemination of leaflets or posters in the local language to be easily understood, and provision of larvae-eating fish in the swamp with the intention of reducing the population of larvae.

Several studies have shown that regular use of mosquito nets at night can reduce the incidence of malaria. Residents who are not using bed nets had 6.44 times the risk of contracting malaria. Avoiding mosquito bites is used sprays, polishes drug or mosquito coils so as to minimize contact with mosquitoes. Habits are outside the house at night makes it easier for malaria transmission has a liveliness biting mosquitoes at night. Habits of gentleness respondents outside the house at night to have a meaningful relationship with the incidence of malaria, because the frequency of the night sucking on high.

In this study, self-protection is indispensable and should be considered primarily as Puskesmas Merlung including malaria endemic. Mosquitoes are the only carriers that play a role in malaria transmission. Home state, home humidity, the use of anti-mosquito cream and use of mosquito nets is not a risk factor for the incidence of malaria but only reduce the chances of transmission of malaria. It is recommended that people living in endemic areas need to obtain sufficient information and knowledge about malaria in order to be able to do to protect yourself (nets, use mosquito repellent, closed body or use a repellent when outdoors) of malaria transmission. The need for dissemination of information on malaria to the community by engaging across relevant sectors as well as religious leaders and community leaders so that people can take precautions, looking for a place of treatment, and can be reported cases of malaria actively to the health center.

The results of the statistical test Chi Square values obtained p - value of 0.004 ($p < 0.05$) so that it can be concluded that there is a relationship between the protection of individuals with the incidence of malaria.

Statistically, there is a relationship between the protections of individuals with malaria incidence in Puskesmas Merlung District of Tanjabbar Year 2013. So univariate and bivariate can be proved there is a relationship.

According to the study there is a relationship between the protections of individuals with the incidence of malaria. In this study, respondents who do not use one of the protection of individuals as much as 56.4% or 53 respondents who do not use one of the protection and the protection of individuals wearing one as much as 43.6% or 41 respondents who wears one of protection. Respondents in the Village Recognize Acid Down there that do not have and do not use personal protection, among others netting used during sleep, most respondents did not use repellent or mosquito repellent substances. In addition there are also those who did not wear closed when out at night, resulting in a high incidence of malaria.

Individual protection is a person attempts to avoid mosquito bites. This can be done in various ways, some of which is to use mosquito nets when sleeping, using a closed protective clothing when out at night and use repellent or mosquito repellent substances. Insecticide-treated nets meant to protect the public, especially infants, young children and pregnant women are particularly vulnerable to malaria-transmitting mosquito bites malaria. The habit of going out at night, where many mosquitoes bite outdoors, but can also go into the house when the man is the main host favored. Repellent is widely used by the public but different repellent insecticide repellent because only repel insects that do not bite but did not kill him. So people should be assisted this effort by using personal protection, among other nets, wear repellent and wear closed at the time out of the house at night.

4. CONCLUSIONS AND SUGGESTIONS

There is a relationship between the presence of mosquito habitats with p value $0.007 < (p = 0.05)$ and the protection of individuals with p value $0.005 < (p = 0.05)$ with the incidence of malaria in Puskesmas Merlung District of Tanjabbar Year 2013. Suggestions for PHC Merlung Doing counseling about malaria as the cause of malaria, malaria symptoms, prevention of malaria and so forth. Coordinating the health worker to perform the Anopheles mosquito eradication efforts. Health Center staff work closely with the environment and public health workers in mosquito eradication activities, such as stockpiling puddles, clearing bushes and grass around the house. Health Center staff must participate with the community to reduce the risk of high malaria incidence. People for People need to increase good behavior, namely: Improving knowledge about malaria, doing good action in mosquito eradication of malaria, using individual protection to reduce direct contact with Anopheles.

REFERENCES

- [1] Widoyono, 2008 *Penyakit Tropis Epidemiologi, Penularan, Pencegahan dan Pemberantasannya*. Erlangga, Jakarta
- [2] Depkes RI, 2008 *Pedoman Penatalaksanaan Kasus Malaria Di Indonesia Gebrak Malaria*, Jakarta
- [3] Adnani, H, 2011. *Ilmu Kesehatan Masyarakat*. Nuha Medika, Yogyakarta
- [4] Widoyono, 2011. *Penyakit Tropis Epidemiologi, Penularan, Pencegahan*, Erlangga, Jakarta
- [5] Achmadi, Fahmi, U, 2008. *Manajemen Penyakit Berbasis Wilayah*, Badan Penerbit Seri Desentralisasi Kesehatan Masyarakat Universitas Indonesia, Jakarta.
- [6] Depkes RI, 2009. *Informasi Umum Malaria*, Jakarta
- [7] Zulkoni, A, 2011. *Parasitologi*, Nuha Medika, Jakarta.
- [8] Machfoedz I. 2007. *Metodologi Penelitian Bidang Kesehatan, Keperawatan, dan Kebidanan*. Yogyakarta: Fitramaya.
- [9] Hidayat, Alimul, Aziz, A, 2009. *Metode Penelitian Keperawatan dan Teknik Analisis Data*. Salemba Medika, Jakarta
- [10] Sastroasmoro S, 2002. *Dasar - dasar Metodologi Penelitian Klinis*. Jakarta : Sagung Seto.
- [11] Lemeshow, 1997. *Besar Sampel Dalam Penelitian Kesehatan*. Penerbit Gadjah Mada University Press. Yogyakarta. Indonesia.
- [12] Depkes RI, 2003. *Modul Entomologi Malaria 3*, Jakarta .
- [13] Kemenkes, 2009. *Undang-Undang republik Indonesia nomor 36 tahun 2009 tentang kesehatan*
- [14] Anton Sitio, 2008. *hubungan perilaku tentang pemberantasan sarang nyamuk dan kebiasaan keluarga dengan kejadian demam berdarah dengue di kota medan*. Tesis. Universitas Sumatera Utara.
- [15] Entjang, I, 2003. *Mikrobiologi dan Parasitologi*. PT Citra Aditya Bakti, Bandung.
- [16] Prabowo, A, 2004. *Malaria Mencegah dan Mengatasinya*. Puspa Swara, Jakarta
- [17] Depkes RI, 2007. *Ekologi dan Aspek Perilaku Vektor*, Jakarta
- [18] Antonius Suprayogi, 2006, Hubungan lingkungan dan perilaku pada pekerja yang menginap di hutan dengan kejadian malaria pada golongan umur 15-50 tahun di kecamatan Mandor Kabupaten Landak tahun 2006. Tesis. Universitas Indonesia.
- [19] Barodji 2000. *Epidemiologi Malaria di Indonesia*, Buletin Jendela Data dan Informasi Kesehatan, Triwulan I, 2001. Jakarta.

- [20] Irianto, K, 2009 *Parasitologi Berbagai Penyakit Yang Mempengaruhi Kesehatan Manusia* , CV Yrama Widya, Jakarta
- [21] Susanto, A, 2007 *Waspada! Gigitan Nyamuk*. PT Sunda Kelapa Pustaka, Jakarta

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