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# Factors Related to the Incidence of Malaria in Konawe Islands Regency

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### ABSTRACT

**Introduction:** This study aims to analyze risk factors related to the incidence of malaria in Konawe Islands Regency. At the time of extraordinary events in Konawe Islands in 1984 it was confirmed that the factors causing malaria that played a role were anopheles subpictus epidemiological research report.

**Method:** Research used in this study is observational research with case control design. Case groups are all respondents who have been affected by malaria, while the control group is a person who is negatively plasmodium. This study was conducted in Konawe Islands Regency with a sample of 92 respondents, consisting of 64 case groups and 46 control groups in Konawe Islands Regency.

**Result:** Bivariate analysis which is a risk factor for malaria events is the environmental factor of the ceiling (p-value = 0.028 OR = 3,500 CI 95%= 1,112-11,017) and puddles (p-value = 0.037 OR = 3,763 CI 95%= 1,038 - 13,646).

**Conclusion:** From the results of multivariate analysis, risk factors that affect malaria events are the existence of breeding sites, the condition of the walls of the house and the presence of bushes. The most influential factor on the risk of malaria events is the presence of breeding site (P-value = 0.028 OR = 3,500 CI 95%= 1).

### Introduction

High Malaria is one of the diseases that still threaten the health of the world community including Indonesia. The World Malaria Report reports that half of the world's population is at risk of malaria. The number of positive cases was 81 million, with a death of 781 thousand people. The most cases are found in Africa and several Asian countries, Latin America, the Middle East and several parts of European countries.<sup>[1]</sup> Malaria is

an infectious disease caused by the plasmodium parasites that live and multiply in human red blood cells. This disease is naturally transmitted through female anopheles mosquito bites.<sup>[2]</sup>

In Indonesia, Malaria is found widespread on all islands with different degrees of endemicity. The disease can bear in an area that has a height of up to 1800 meters above sea level. The most species found are P.Falciparum and P.Vivax, P.Ovale have been found in Papua and East Nusa Tenggara. The condition of the area where the

puddles and hot air affect the level of malaria endemicity in an area.<sup>[3]</sup>

At the time of extraordinary events in Konawe Islands in 1984 it was confirmed that the factors causing malaria that played a role were anopheles subpictus (epidemiological research report.<sup>[4]</sup> This typical symptom is usually found in non-immune sufferers. Before the emergence of fever, usually sufferers feel weak, complain of headaches, loss of appetite, feel nausea, in the ulu liver, or vomiting (all these initial symptoms are called prodormal symptoms.<sup>[5]</sup>

Positive cases of malaria in Konawe Islands Regency in 2019, namely in the working area of Lansilowo Health Center as much as 38%, Ladiana Health Center 25%, Polara Health Center 25%, Lampeapi Health Center 13% and in 2020 Lansilowo Health Center as much as 57%, Bobolio Health Center As many as 29%, Polara Health Center 14% and in 2022 there were positive cases of malaria, namely in the Ladiana Health Center as much as 43%, Konawe Islands District Hospital as much as 29%, Lansilowo Health Center as much as 14% at the Konawe Islands Office of the Health Office.

Based on the results of the initial survey conducted by researchers found that the habit of leaving the house at night was 93.3%, did not use the ceiling of the house 93.3%, a puddle that had the potential to become a mosquito breeding site as much as 89.5%, not using 86.7% house ventilation, did not use a mosquito net of 76.7%, did not use 76.7% anti -mosquito coils, 60.0% house wall density, 76.7% shrubs and 33.33% of education factors.

From the results of the initial survey conducted by the researcher that the factors considered related to the events of malaria in Konawe Islands Regency are the habits of activities outside at night, not using the ceiling of the house, the presence of standing water

(sewers/gutters), do not use ventilation at home, do not use mosquito nets while sleeping at night, do not use anti -mosquito drugs, and educational factors.

## Method

This type of quantitative research uses a cross sectional study design with the population of the case of people who have been exposed to malaria and the population of community control that live close to the case population and as many as 92 cases and sample controls taken.

## Result

**Table 1** shows that from 46 malaria case, there were 34 people that do not have a ceiling of the house. And from the 46 control group of malaria events, there were 34 people that do not have a ceiling of the house. The result of chi square test found that there is a relationship between malaria events and ceiling with values 0,000 and from the significant test found that phi was 1,000 it means that the ceiling of the house and malaria events have a very strong significance relationship.

**Table 2** shows that from 46 malaria case, there were 25 people that do not have puddles in their house. And from the 46 control group of malaria events, there were 25 people that do not have puddles in their house. The result of chi square test found that there is a relationship between malaria events and puddle with values 0,000 and from the significant test found that phi was 1,000 it means that the puddles and malaria events have a very strong significance relationship.

**Table 1**  
**Distribution of Malaria Events with the Existence of the Ceiling of the House in Konawe Islands Regency in**

House Ceiling	Malaria events		P-Value	OR
	Cases	Control		
There is	12	12	0.028	3,500
There isn't any	34	34		
Total	46	46		

**Table 2**  
**Distribution of Malaria Events with the Existence of the Ceiling of the House in Konawe Islands Regency**

Puddle	Malaria events		P-Value	OR
	Cases	Control		
There is	21	21	0.037	3,763
There isn't any	25	25		
Total	46	46		

## Discussion

The results of the study are known from the results of data analysis of the existence of the house ceiling and puddles obtained p-value is  $0,000 < 0,050$  and PHI values of 1,000 which means they have a very strong relationship, so that the two factors play a role in the incidence of malaria in the Konawe Islands Regency.

All of these vectors live according to local ecological conditions, among others, there are mosquitoes that live in brackish water at a certain level of salinity (An. Sundaicus, An.Subpictus), some live in the fields (An.aconitus), clean water in the maculatory (an. Maculatus ), puddles exposed to sunlight (An. Punctulatus, An. Farauti).<sup>[6]</sup> Ceiling or dividing the upper wall room with a roof made of wood, internal or woven bamboo fine bamboo as a barrier to mosquito entry into the house seen from the presence or absence of the ceiling to all or part of the room of the house.<sup>[7]</sup>

The spread of malaria is basically very dependent on the interaction between three basic factors of epidemiology, namely agents (causes of malaria), hosts (humans and mosquitoes), and environment. Malaria or plasmodium parasites are a cause of malaria. For the survival of the malaria parasite through 2 cycles consisting of asexual cycles in the human body as intermediate hosts and sexual cycles in the body of anopheles mosquitoes as a definitive host. For the breeding of anopheles mosquitoes as a vector of malaria diseases, environmental/habitat conditions are in accordance with the needs of mosquito life. The environment can be in the form of a physical environment, chemical environment, biological environment, and socio-cultural environment.<sup>[8]</sup>

The existence of malaria mosquitoes in an area is very dependent on the environment, areas such as plantations, beaches, rainfall, wind speed,

temperature, lighting, height of places and shapes of existing waters. *Anopheles aconitus* mosquitoes are found in rice fields, mosquito breeding areas, especially in terraced rice fields and in irrigation channels.<sup>[9]</sup>

During this time the efforts made by the Konawe Islands Regency Government are more oriented to prevent disease such as vector control in the form of a distribution of mosquito nets, the spraying of the house/indoor residual spraying, case discovery activities and malaria treatment both in hospitals ,health center, as well as mass blood survey and counseling activities and awareness that efforts to eradicate malaria require integrated and comprehensive treatment. The success of malaria control cannot be achieved without considering the factors mentioned above.

Factors affecting Malaria events in society. Individual factors, such as community behavior have a higher risk of transmission such as the habit of leaving the house at night without using personal protective equipment or mosquito repellent. Besides sleeping habits do not use mosquito nets and work factors have a large enough risk effect on malaria, especially in endemic areas.<sup>[10]</sup>

## Conclusion

The conclusion if this study was there is a very strong relationship between physical environmental factors (ceiling and puddles) with malaria occur Konawe Islands Regency.

## Reference

1. World Health Organization. *Global Malaria Burden*. Geneva: World Malaria Report; 2010.
2. Ministry of Health R.I. *Module of Malaria Entomology 3*. Jakarta: Directorate General Ministry of Health R.I; 2003.
3. Rudono. *Relationship of Malaria in Pregnant Women with Low Birth Heavy Infants in Malaria Endemic Areas Purworejo Regency*. Yogyakarta: Postgraduate Thesis at Gajah Mada University; 2003.
4. Ramadhani, T., Amirullah, A., & Rahmat, R. Entomology Study in Supporting Malaria Control through the Flying Health Care (FHC) Program in Yahukimo District, Papua Province. Balaba: *Journal of R&D of Disease Control Sourced from Banjarnegara Animals*. 2021; 17(2):191-204.
5. Sutrisna, P. *Malaria briefly from basic knowledge to applied*. Jakarta: Medical Book Publisher; 2004.
6. Harijanto, A. *Malaria, epidemiology, pathogenesis, clinical manifestations and treatment*. Jakarta: EGC; 2000.
7. Rahardjo, T. *The physical condition of the house and the environment around malaria sufferers in Bagan Village in TanjungTiram District, Batu Bara Regency in 2012*. (Thesis). Medan: USU Faculty of Public Health; 2012.
8. Ministry of Health R.I. *Module of Malaria Epidemiology*. Jakarta: Directorate General. PPM and PL of the Ministry of Health R.; 2014.
9. Mulyono, A., Alfiah, S., Sulistyorini, E., &Negari, K. S. The Relationship between the Existence of Livestock and the Location of Livestock Rearing on Malaria Cases in NTT Province (Advanced Analysis of 2007 riskesdas data). *Vektora: Jurnal Vektor dan Reservoir Penyakit*. 2013; 5(2):71-74.
10. Nawangsasi, C. P. Descriptive Study of Malaria Incidence in the Working Area of Rowokele Health Center, Kebumen Regency. *Journal of Public Health, Diponegoro University*. 2012;1(2):18855.