International Journal of Sciences: Basic and Applied Research (IJSBAR)

ISSN 2307-4531
(Print & Online)

http://gssrr.org/index.php?journal=JournalOfBasicAndApplied

Environmental Overview and Physical Characteristics of Clinical Malaria Patients' Houses in Caile, Ujungbulu Subdistrict, Bulukumba

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Abstract

Malaria is one of the public health problem that can causing death.Environmental factors that can affect the physical home of malaria are temperature, humidity and *Breeding Place.* The purpose of this researchis to describe the characteristics of the home environment and physical condition of patients with clinical malaria in Caile, Ujungbulu subdistrict, Bulukumba.Sampling was carried out with *exhaustive sampling* method in order to obtain as many as 63 patients' house.Temperature and humidity measurement method performed *probability sampling of* sampling points for each home as much as 2 points from inside and outside of the home are measured at two different times in the day and night.The results showed that the presence *of Breeding Place* as many as 57 breeding places. The air temperature in the homes of people during the day ranged between 26 ^{0}C-31.65 ^{0}C while outside the home ranged from 26.5 ^{0}C-32.25 ^{0}C with an average temperature of 27.98 ^{0}C, at night the air temperature in the house of the respondents ranged from 25.5 ^{0}C-29.6 ^{0}C and outside the home range C-29.75 25.15 ^{0} C with an average temperature of 29.25 ^{0}C.For home humidity at noon respondents ranged from 60% -74% both in and outside the home with 63 houses that have optimal moisture, while at night ranged between 61% -78%.

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The conclusion of this research is the air temperature and humidity of the house of clinical malaria in Caile at the optimum temperature for growth of mosquitoes, mosquitoes activity as rest and activity bite and suck blood.

Keywords: Patients' House, Houses Physical Environment Characteristcic

1. Introduction

Malaria is a public health problem that can cause death, especially in high-risk groups i.e. infants, toddlers, pregnant women, besides malaria directly cause anemia and can decrease productivity [1, 2]. Environmental factors have a very large role in health plays. Vector environment is the environment in which vectors can breed, including the physical environment, chemical environment, biological environment and socio-cultural environment [1, 3]. The ability to transmit malaria is determined by a complex interaction of several factors, such as: *the hosts,* vectors, pathogens and environmental factors. Temperature effect on the activity, food consumption, growth and other physiological functions of mainland animals [4]. Low humidity shortens the life of mosquitoes, although no effect on the parasites. Humidity level by 60% is the minimum threshold to allow the mosquitoes life. At health center area of Caile, Ujung Bulu subdistrict Bulukumba there are 275 cases in 2007, in 2008 1255 cases in 2009 amounted to 1006 cases and in 2010 amounted to 894 cases and in 2011 amounted to 963 cases with 334 cases of clinical malaria in Caile [5].

2. Materials and methods

2.1 Research sites

The research was conducted in the Caile Village, Ujungbulu subdistrict, Bulukumba regency, South Sulawesi Province. Bulukumba Geographically located at coordinates 5^{0} 20 "and 5^{0} 40" and 119^{0} 50 "to 120^{0} 28 'east longitude.

2.2 Research methods

The population in this research is the whole houses in which there are one or more family members who suffer from clinical malaria based on medical record Caile Health Center in the period from January to May 2012 and domiciled in the Caile Village, there are 63 cases that inhabit 63 houses. Samples were selected in this study was conducted using *total sampling* so that in this research the number of samples taken equal to the number of the population of 63 houses. Measurements were made using observation sheet to the temperature and humidity outside and inside the house environment also direct observation in the field about whether or not the *breeding place,* the measurement of temperature and humidity measurements were taken 2 times i.e. on the day and night using a tool called Thermo hygrometer.

3. Results

The states Overview of the physical environment includes the physical condition of the house, temperature, humidity, breeding place and the type of breeding place

Table 1: Patients House Based on temperature parameters in the Caile Village

Temperature (^{0} C)								
	Day				Night			
	Inside		Outside		Inside		Outside	
	n	%	n	%	n	%	n	%
Optimum for the growth and activity of mosquitoes (25^{0} C-30^{0} C)	49	77.8	42	66.7	63	100	63	100
Less than optimum for the growth and activity of mosquitoes (<25^{0} C or> 30^{0} C)	14	22.2	21	33.3	0	0	0	0
Total	63	100	63	100	63	100	63	100

Table 2: Patients House Based on the parameters of humidity in the Caile Village

Humidity				
	Day		Night	
	n	%	n	%
Optimum (≥60%)	63	100	63	100
Not Optimum (<60%)	0	0	0	0
Total	63	100	63	100

Table 3: Patients House Based on the existence of *a breeding place* in the Caile Village

The existence of a breeding place	n	(%)
positive	57	90.5
negative	6	9.5
Total	63	100.0

4. Discussion

In the results of measurements carried out that the average temperature of 27.98 ^{0} C at noon and 29.25 ^{0} C and research at whole night, the temperature range are of 0^C -32.25 25.5 ^{0} C. The temperature improvement will affect the bionomics changes or biting behavior of the mosquito population. The age of mosquitoes is strongly influenced by air temperature which is conducive temperature ranges between 25-30 ^{0}C. Moisture measurement was conducted to determine the effect of relative humidity on the mosquito population. At higher humidity the mosquitoes bites will be more active, thus increasing the transmission of malaria. Level of 60% is the lowest limit to allow the mosquitoes life. The presence of high humidity affect the mosquitoes to find a place that is moist and wet outside of the home as a resting place during the day [5].

Breeding Place in this case is the marshes, ponds or rice fields, trenches or rivers and puddles. There are 15 breeding place such as the marshes due to the research area are found the marshes around the patients' houses. Similarly at the pond / rice fields, trench / rivers and puddles. The high puddles around the house because the rainfall around the research area is quite high

5. Conclusion

Malaria is a disease caused by *Plasmodium* in the mosquito *Anopheles* vector *form.* The conclusion of this research is that, temperature in the homes of people generally is the optimal temperature for growth and mosquitoes activity 250C-300C, with a temperature range 25,150C-32,250C. Humidity in the homes of people generally are optimal humidity for Anopheles namely 60%. With a humidity range of 60% -78%. Total breeding place as a breeding ground for a number of 57 Anopheles breeding sites. Breeding place due to the presence of many people generally live in the suburbs and high rainfall during the research

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