**International Journal Of Health Science** Vol 3 No. 1(Marc 2023) Hal 010-016
E-ISSN : 2827-9603 P-ISSN : 2827-959X

# INTERNATIONAL JOURNAL OF HEALTH SCIENCE

Link Page: https://ejurnal.politeknikpratama.ac.id/index.php/ijhs
Page: https://ejurnal.politeknikpratama.ac.id/index.php

## EFFORTS TO PREVENTING MALARIA IN COMMUNITIES KAMPUNG NOLOKLA, EAST SENTANI DISTRICT, JAYAPURA REGENCY

**Renold M. Mofu [a], Wiwiek Mulyani[b], Andreas C. Ayomi[c]**
[a] Jurusan Kesehatan Lingkungan, renoldmofu74@gmail.com Poltekkes kemenkes Jayapura
b Jurusan Kesehatan Lingkungan, wiwiekmulyani03@gmail.com , Poltekkes kemenkes Jayapura
[c] Jurusan Kesehatan Lingkungan, andreas.ayomi@poltekkesjayapura.ac.id , Poltekkes kemenkes Jayapura

**ABSTRACT**

Malaria is one of the public health problems that can lead to death. Papua is one of the highest contributors to malaria cases. Therefore, the community needs to make efforts to prevent malaria. This study aims to obtain information about malaria prevention efforts carried out by the community in Nolokla Village. This type of research is descriptive. The sampling technique uses Stratified Random Sampling. A sample of 98 households was selected by tier. Data were collected using questionnaires and observation sheets (cheklists). The results showed that those who did not meet the requirements in this study were mosquito shelters (100%), the habit of going out at night (86%), mosquito repellent (77%), the habit of opening the door at night (78%), and for those who met the requirements, namely the use of mosquito nets (89%), the use of gauze wire in house ventilation (65%), the use of ceilings 64%, home hygiene efforts (71%), the habit of opening windows at night (100%). The prevention carried out by the people of Kampung Noloklais the use of mosquito nets in their bedrooms, the use of mosquito screen wire in the ventilation of the house, the place where mosquitoes are still found around the house and the use of health services tends to be rarely used by the community. For this reason, health workers, especially sanitation and health promotion workers, are more active in holding counseling and inviting village elements to protect the environment.
**Keywords:** Malaria, Prevention efforts, Malaria Healthcare, Kampung Communities

### INTRODUCTION

Malaria is one of the public health problems in the world. This is the leading cause of death in many developing countries, especially in children and pregnant women as the main group that is easily infected. The World Health Organization (WHO) estimates that about 41% of the world's population could be infected with malaria. Every year there are 300 – 500 million sufferers experiencing serious illnesses and at least 12.7 million of them die from malaria. (BPKRP, 2009).

Malaria disease is actually caused by the seeds of diseases that live in human blood, these seeds are in the Parasitic group called Plasmodium. There are types of Plasmodium groups that can cause malaria with different specifications. Malaria is caused by Plasmodium which is bitten by a mosquito type Anopheles sp. Malaria is still a public health problem, in more than 107 countries around the world. As many as 3.2 billion people in the world live in areas at risk of malaria transmission. An estimated 350 to 500 clinical malaria events occur per year, mostly caused by Plasmodium falciparum and Plasmodium vivax infections (Kemenkes, 2018).

According to data from Indoensia Ministry of Health, the total malaria cases reached 94,610 cases in 2021 and it's still one of the public health problems that can cause death, especially in high-risk groups, namely babies, toddlers, pregnant women. It is estimated that 35% of the Indonesian population lives in areas at risk of contracting malaria. Of the 484 regencies/cities in Indonesia, 338 regencies/cities are malaria endemic areas (F, DH 2007). More than 3 million

*Received Oktoberl 30, 2022; Revised November 2, 2022; Accepted December 22, 2022*

clinical cases of malaria are reported per year, mainly in areas categorized as poor, and 30,000 cases of malaria deaths reported by health care units, including community health centers (puskesmas) and hospitals. Until now, Malaria is still a health problem in Indonesia recorded in 2018 there were 222,085 cases. The highest contributors to malaria cases came from five provinces in eastern Indonesia, namely Papua, West Papua, Maluku, North Maluku and East Nusa Tenggara Provinces (Kemenkes, 2021).

Malaria in Papua is a major health problem because this area is one of the malaria endemic areas with Indonesia's hyperendemition category, and there have been reported failures in malaria treatment with the standard drug chloroquine (Damayanti, 2018). Papua Province is the province with the highest number of cases in Indonesia with 176,070 cases. Papua is an endemic area of malaria and the largest contributor to cases in Indonesia, accounting for 79% of cases. API (Annual Parasite Incidence) Jayapura Regency is included in the three districts with the highest API in Indonesia.

Annual Parasite Incidence Jayapura Regency is included in the three districts with the highest API in Indonesia. The malaria situation in Jayapura Regency in 2018, the API number > 100 along with Keerom, Sarmi, Mimika and Boven Digoel Regencies. Although the death rate due to malaria has decreased from year to year, the transmission is still high enough that it requires effective control efforts so that Indonesia's malaria elimination goals can be achieved by 2030 (Kemenkes, 2018).

Based on preliminary studies, all malaria patients with an address in Kampung Nolokla recorded on the outpatient register of the Harapan Health Center in East Sentani District from January to December 2020 totaled 745 people, January to December 2021 totaled 905 people. The results showed that the number of malaria sufferers was 1,650 people. Based on the highest age group at 15-64 years, namely (52.1%), the female sex. In conclusion, Kampung Noloklahas so many cases of malaria because the location of the malaria sufferer's house is on the edge of the forest, swamps, there are holes and puddles so that it has the potential to become a place for anopheles larvae to live.

The geographical condition of Kampung Noloklais dominated by mountain areas, hills, residential areas, lakes, yards that have swamps that are directly exposed to sunlight so that they have the potential to become a place for Anopheles sp mosquitoes to miss and malaria transmission is easy to occur. The high transmission of malaria in Nolokla Village, East Sentani District, is caused by several factors, namely: 1) The habit of sleeping residents not using mosquito nets, 2) the existence of mosquito shelters in the form of swamps and puddles in the got, 3) community compliance with taking medicine is still lacking. Countermeasures have been carried out continuously on malaria sufferers, including the activity of patient discovery both actively (Active Case Detetion) and passive (Pasife Case Detection), patient treatment (clinical malaria), radical treatment (positive blood preparations), and severe malaria treatment (hospitalization) and survailans.

Vector clearance has been carried out by spraying the house, larvaciding, biological control and distribution of mosquito nets, carrying out community participation in malaria outbreaks, counseling to clean puddles or potential places that are places for anopheles sp mosquitoes. For this reason, this research will focus on identifying community efforts in malaria prevention in Kampung Nolokla, East Sentani District, Jayapura Regency, Papua

**METODH**

The type of descriptive study was chosen by researchers to identify malaria prevention efforts, with a sample of 98 families in Kampung Nolokla. Stratified Random Sampling sampling method. The distribution of selected samples includes; RW 01/ RT 01.02 as many as 10 Families; RW 02/ RT 01.01 as many as14 Families; RW 03/ RT 01.02 As many as 26 Families; RW 04/ RT 01.02 as many as 19 Families; RW 05/RT 01.02.03 as many as 29 Families. To find out the efforts made by the researchers are assisted by questionnaire sheets and observation sheets which are then processed using percentage data for each variable.

**RESULT**

1. Characteristic of Respondents

Table 1
Characteristic Respondent in Kampung Nolokla Distrik Sentani Timur Kabupaten Jayapura

| **Characteristic** | **Frequensi (F)** | **Presentase (%)** |
|---|---|---|
| Age | | |
| ≤ 20 Year | 20 | 20 |
| 20 – 29 Year | 40 | 41 |
| ≥ 30 Year | 38 | 39 |
| **Quantity** | **98** | **100** |
| Gender | | |
| Laki-Laki | 43 | 44 |
| Perempuan | 55 | 56 |
| **Quantity** | **98** | **100** |

*Source : Data Primer, 2022*

Table 1 shows that the distribution of respondents in Kampung Nolokla, Sentani District based on the highest age group at 20-29 years, namely 40 people (41%) and the lowest age group ≤ 20 years 20 people (20%); Whereas Gender majority women as 55 human (56%) and 43 men (44%).

2. Efforts of Prevention Malaria

The following research findings related to malaria prevention efforts are shown in table 2 below:

Table 2
Effort of Prevention Malaria in Kampung Nolokla, East Sentani Disctrict, Jayapura Regency

| Effort of Prevention Malaria | **Frequensi (F)** | **Presentase (%)** |
|---|---|---|
| **The Habit of Wearing Mosquito Nets during Sleep** | | |
| Yes | 87 | 89 |
| No | 11 | 11 |
| **Quantity** | **98** | **100** |
| **The use of gauze wire in the ventilation** | | |
| Yes | 64 | 65 |
| No | 34 | 35 |
| **Quantity** | **98** | **100** |
| **Use of Ceiling** | | |
| Yes | 63 | 64 |
| No | 35 | 36 |
| **Quantity** | **98** | **100** |
| **Mosquito Shelter** | | |
| Exist | 98 | 100 |
| Not exist | - | - |
| **Quantity** | **98** | **100** |
| **Cleanliness of the Home Environment** | | |
| Cleang | 70 | 71 |
| Less Clean | 28 | 29 |
| **Quantity** | **98** | **100** |
| **The Habit of Hangout at night** | | |
| Yes | 84 | 86 |
| No | 14 | 14 |

| | | |
|---|---|---|
| **Quantity** | **98** | **100** |
| **Opening the door house at night** | | |
| Yes | 22 | 22 |
| No | 76 | 78 |
| **Quantity** | **98** | **100** |
| **The Habit of opening windows at night** | | |
| Yes | - | |
| No | 98 | 100 |
| **Quantity** | **98** | **100** |
| **Using Mosquito Repellent** | | |
| Yes | 23 | 23 |
| No | 75 | 77 |
| **Quantity** | **98** | **100** |
| **Wearing trousers outside at the night** | | |
| Yes | 50 | 51 |
| No | 48 | 49 |
| **Quantity** | **98** | **100** |

*Source : Data Primer, 2022*

Efforts to prevent malaria by the community as illustrated in table 2 above show the following:

a. The majority of 87 (89%) Families in Kampung Nolokla have a habit of using the mosquito nets and do not use as many as 11 Families (11%);
b. Most used gauze wire in house ventilation as many as 64 houses (65%) used gauze wire on ventilation and those who did not use gauze wire in house ventilation as many as 34 houses (35%)
c. Majority families in Kampung Nolokla used the ceilings in houses as many as 63 (64%) units and didn't use a ceiling 35 (36%).
d. 100% Kampung Nolokla a mosquito shelters;
e. Majority have clean houses environment was 70 houses (71%) and less clean as many as 28 houses (29%).
f. Majority the Habit of Leaving the house at night, namely 84 people (86%) have the habit of going out at night and those who do not have 14 people (14%).
g. 76 (78%) house opened at night and 22 (22%) have a closed houses;
h. 100% families having habit opening a windows at night
i. 75 (77%) families do not uses mosquito repellent and 13 (23%) used moswuito repellent;
j. Namely 50 people (51%) have the habit of wearing trousers at night outside the house and 48 people who do not use trousers at night outside the house (49%).

**DISCUSSION**

1. Mosquito nets used

The results of this study found as many as 87 people (89%) respondents who had used mosquito nets during nighttime sleep. This is one of the factors that can prevent malaria infection in Nolokla Village. The use of mosquito nets is one of the protective measures aimed at reducing direct contact between humans and mosquitoes. The reason respondents used mosquito nets was because of the awareness of the high level of malaria disease and getting free mosquito nets from the health center, and the condition of the house without gauze wire so they used mosquito nets. The results of this study are the same as the Natural study (2016) states that the use of mosquito nets can affect the risk of malaria infection. People who do not use mosquito nets during nighttime sleep will be at a higher risk of developing malaria infection compared to people who use mosquito nets at night.

2. Use of Gauze Wire Ventilation

Gauze wire is a light curtain, translucent with nets that can withstand various biting insects. Gauze wire is used to cover the entry of insect vectors, namely mosquitoes, so as to prevent an increase in the number of mosquitoes in the house. Based on the results obtained, it is stated that the number of houses that use gauze is (65%) Some respondents use gauze only in rooms such as in rooms and as a whole house. Respondents who did not use gauze on home ventilation were (35%). The reason why people do not install gauze wire is because of economic problems, namely the inability of people financially to buy gauze wire. The occurrence of malaria caused by houses that are not attached to gauze wire will facilitate the entry of mosquitoes into the house. Gauze wire is a mosquito barrier if the gauze wire is in good condition (Lestari et al, 2007).

3. Use of ceilings

Based on this study, data was obtained by 64% (63 people) of ceiling use at home. The ceiling of the house is an area that borders between the floor and the roof. The use of ceilings at home is one of the important factors for malaria prevention, where there are several variations in resting place from several other studies and the anopheles mosquito meyority rests below the ceiling, on the upper wall and furniture (Paaijmans & Thomas, 2011). Houses that do not have a ceiling have a risk of malaria transmission. Related to the resting place anopheles mosquitoes that like house temperatures, because it is warmer so that direct contact between the occupants of the house and mosquitoes is higher. This has the potential to increase the risk of malaria exposure. This is in accordance with the results of a Kenyan study which stated that living in a house without a ceiling/ ceiling, roofed with zinc is associated with a high risk of malaria transmission (Ernst et al, 2009).

4. Mosquito Shelter

Respondents around their homes had 98 puddles (100%). The puddles found in Nolokla Village are dishwashing ponds, swamps, bushes and SPAL that are open with calm water conditions or do not flow directly. This shows that people have low awareness of mosquito shelters. Such conditions are a potential habitat for the breeding of Anopheles sp. mosquitoes. This is due to the lush bushes and impenetrable to sunlight. It is viewed from the bionomy of the Anopheles mosquito in the Kertosari area that during the day Anopheles maculatus and Anopheles balabacensis are found resting in the bushes. The existence of lush bushes will block sunlight from penetrating the soil surface, so that the presence of lush bushes results in a shady and humid environment and this situation is a resting place that is loved by Anopheles mosquitoes, so that the number of mosquito populations around the house increases and causes families who live in houses with shrubs around them to have a risk of malaria outbreaks compared to families who live at home there are no bushes around it (Lestari et al, 2007).

5. Environmental hygieng efforts

Pomalingo and Ali Ibrahim (2003) suggest that environmental health is a huge influence on human health. Within the appropriate environment, the cause of the disease can be preserved and transmitted from human to human, from animal to human, from animal to animal, or from human to animal. The health condition of this environment from time to time, and from one community to another varies and levels by paying attention to the factors that influence the transmission of the disease such as: ventilation of the house, livestock pens, dirty puddles and so on, by always maintaining the cleanliness of the environment inside and outside the house.

6. The Habit of being outside

The habit of doing activities / leaving the house at night can increase the risk of developing malaria. This is because it is very likely to be bitten by an Anopheles mosquito. This statement is confirmed by research in Pangkalpinang which shows that the habit of going out at night has a higher risk of developing malaria (Sunarsih & Sulistyani, 2009). Based on the study, 86% (84 people) were found to be respondents who went out at night. Respondents in Kampung Nolokla have a fairly high habit of going out at night, with several reasons, namely shopping needs at the kiosk, socializing with neighbors, and children who are still playing late at night outside the night. The results of this study are the same as Harmendo's research (2008)

which states that there is a meaningful relationship between the habit of being outside the home at night and the incidence of malaria in the working area of the Kenanga disctrict of Sungailiat Health Center, Bangka Regency where a p value = 0.001 with RR = 4.69 and 95 % CI = 2,369-9,303 (Harmendo, 2008) was obtained. It is also supported by research that states that bad people's habits, including going out at night, are factors related to malaria incidence in Southeast Minahasa Regency (Wiztafia A. Ajami, Ronald I. Ottay, 2016).

7. The habit of opening the door of the house at night

   The activity of closing the door before sunset is expected to reduce the possibility of contact between Anopheles mosquitoes and humans in the house. However, based on research obtained as many as 22% of people in Nolokla Village still open their doors at night.

8. Opened window at night

   This result is not in accordance with Anwar (2001) research which shows that the habit of opening windows frequently at 18.00-22.00 has a 33 times greater risk of malaria than those whose windows are always closed. The difference was caused by the condition of the houses of the study subjects in Nolokla Village, all of which (35%) did not use gauze wire in the ventilation of the house and some (36%) of the roof did not have a ceiling, so that it still allowed mosquitoes to enter the house and contact with humans even though the door or window was closed.

9. Mosquito Repellents used

   The use of mosquito repellent is one of the efforts to reduce and prevent the risk of malaria. The results of this study are the same as Wibowo's research (2017), stating that people who do not use mosquito repellent drugs have a higher risk of being infected with malaria than people who often use mosquito repellent. Based on the results of the study stated that there were 75 people (77%) who did not use mosquito repellent, this shows that the number of respondents who do not use mosquito repellent is higher than respondents who use mosquito repellent. According to the statement of respondents who do not use mosquito repellent because they feel that it is enough to use mosquito nets alone, the average type of mosquito repellent used is mosquito repellent (Fumigant), for them it can have side effects of shortness of breath.

10. Wearing long pants at night

    Based on the results of the study, there is a relationship between the use of trousers and the incidence of malaria with (51%) people who use trousers when leaving the house and (49%) who do not use, meaning that people who do not often use trousers are more at risk of developing malaria compared to people who often use trousers at night. The results of the same study were also conducted by Hidayat (2010) in the Nongsa and Galang Districts of Batam City, Riau Islands, which stated that there was a significant relationship between how a person dresses by wearing long sleeves and trousers when going out at night with the incidence of malaria (p = 0.001 and OR 1.926).

## CONCLUSION

Efforts to prevent malaria by the people of Nolokla village by using mosquito nets, installing gauze wire on house ventilation, using house ceilings, cleaning houses, using mosquito repellent and using trousers at night. Meanwhile, because the Nolokla Village area consists of swamps, the habit of leaving the house, the habit of opening the doors and windows of the house at night then becomes a factor in the occurrence of malaria. For this reason, health counseling efforts and research related to malaria vectors in Kampung Nolokla are needed as a means to prevent malaria in the community.

**Acknowledgement**

Poltekkes Kemenkes Jayapura who have facilitated the publication of this article and the people of Nolokla Village who are willing to be used as research sites.

**Reference**


Achmad Agus Purwantoro, 2018, " Perbedaan pengetahuan masyarakat sebelum dan sesuda pendidikan kelabu berinteksida sebagai upaya preventif malaria di desa suka jaya lepasing kabupaten pasawaran lampung". https://scholar.google.com/scholar?hl=id&as0%2c5&q=achmad+agus+purwantoro+Malaria&btnG=#d=gs_qabs&p=&u%23p%3DokgK5xj_DOJ

Akhasin Zulkoni, 2009, "Parasitologi" Nuha medika Yogyakarta.

Alami, 2016, Tindakan Pencegahan Malaria Di Desa Sudorojo Kecamatan Kaligesing Kabupaten Purworojo, Purworojo.

Balai BPKRP, 2009, "Modul Entomologi Dasar". Balai penelitian vector dan Reverior Penyakit : Salatiga.

Dantje T. Sembel, 2009, " Entomologi Kedokteran" C.V ANDI OFFSET (Penerbit ANDI).

Ernst et al, 2009, Environmental, socio-demigraphic and behaviourak determinants of malaria risk in the western Kenyan highlands : a case – control study. Tropical medicine and international health, 14(10), 1258-1265. https://doi.org/10,1111/j.1365-3156.2009.02370.x

Hidayat ahmad, 2010 Hubungan Aktifitas Keluar Rumah Pada Malam Hari Dan Penggunaan Kelambu Dengan Kejadian Malaria Di Kecamatan Nongsa Dan Galang Kota Batam Provinsi Kepulauan Riau Tahun 2010.

Helmin Rumbiak, 2006, "Analisis Manajemen Lingkungan Terhadap Kejadian Malaria Di Kecamatan Biak Timur Kabupaten Biak Numfor Papua" Https://Kumpulanskripsi.Wordpress.Com/2011/03/Kumpulan-Judul-Tesis-Undip-01 (27 Maret 2011).

Hermendo, 2008, Faktor Risiko Kejadian Malaria Di Wilayah Kerja Puskesmas Kenanga Kecamatan Sungailiat Kabupaten Bangka.

Kasus Malaria Kota Jayapura tersedia pada http://m.trubus.id/baca/1047/malaria_masi_intai_kota_jayapura

Kemenkes RI. 2018. Situasi Malaria Terkini tahun 2018. http://www.malaria.id/. (diakses pada 3 Januari 2019)

Lestari Dkk, Vector Malaria Di Daerah Bukit Menorehm Purworejo, Jawa Tengah. Media Penelitian Dan Pengembangan Kesehatan. Vol. 17. No. 1. 2007:30-35

Paaijmans, K. P., & Thomas, M. B. (2011). The influence of mosquito resting behaviour and associated microclimate for malaria risk. Malaria Journal, 10 (183). https://doi.org/10.1186/1475-2875-10-183

Reinhard Gurning, 2011, " Upaya – upaya pencegahan penyakit Malaria di kampung Yoboi Tahun 2011" Politeknik Kesehatan Kemenkes Jayapura.

Sry Wahyuni, Ristiyanto, Frida DH, 2007, " Survei dinamika penularan malaria di desa Banjaretno Kecamatan Kajoran, Kabupaten Mangelang jawa tenga" Media penelitian dan pengembangan Kesehatan,jln percetakan Negara no.29 Jakarta Pusat 10560 Indonesia.

Sunarsih, E., & Sulistyani, N. (2009). Faktor Risiko Lingkungan Dan Perilaku Yang Berkaitan Dengan Kejadian Malaria Di Pangkalpinag. Kesehatan Lingkungan Indonesia, 8(1), 1-9

Suryani Eprin Damayanti, 2018, "Faktor – factor yang berhubugan dengan kejadian penyakit malaria diwilaya kerja Puskesmas Anggut atas Kota Bengkulu.https://google.com/scholar?hl=id&as_sdt=0%2C5&q=Suryani+eprint+Damayanti&btnG=d=gsqabs%p=&u=%23p%3DWBLINAyq

Suryanita, 2013, "Upaya – upaya pencegahan Malaria oleh masyarakat di kampong Waibron wilayah kerja Puskesmas Dosai" Politeknik Kesehatan Kemenkes Jayapura.

Wibowo, 2017, Risiko Kejadian Malaria Di Wilayah Kerja Puskesmas Kecamatan Cikeusik

Wiztafia A. Ajami, 2016 Hubungan Antara Perilaku Masyarakat Dengan Kejadian Malaria Di Wilayah Kerja Puskesmas Tombatu Kabupaten Minahasa Tanggara