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Analysis of House Sanitation and Hygiene With Malaria Incidence in Nerong Village, Kei Besar Selatan District, Maluku Regency Southeast

Indah Kumala Sari Roroa[1], Ukik Agustina[2]
Universitas STRADA Indonesia
***Corresponding author:** indahkumalasariroroa_2024@gmail.com

ABSTRACT

The high number of malaria cases in September-December 2023 as many as 82 cases was caused by poor home sanitation and hygiene which are factors related to malaria transmission because they provide a suitable environment as a resting place and breeding place for mosquitoes carrying malaria. The purpose of this study was to determine the relationship between home sanitation and hygiene with the incidence of malaria in Nerong Village, Kei Besar Selatan District, Southeast Maluku Regency. The design of this study is quantitative analytic with a case-control approach. Respondents were taken using a 1:1 case-control study formula with a case sample of 45 people and a control sample of 45 people, so that the total respondents were 90 people. The independent variables were sanitation and home hygiene and the dependent variable was the incidence of malaria. The results of statistical tests used a 2 x 2 chi square table. The results of the study showed that home sanitation was known by most respondents as many as 53 (58.9%) in the category of not meeting requirements. Hygiene was known by most respondents as many as 47 (52.2%) respondents in the category of not meeting requirements. The incidence of malaria was known by half of the respondents as many as 45 (50.0%) in the category of having a history and half of the respondents as many as 45 (50.0%) in the category of having no history. The results of data analysis show that the variable of home sanitation with the incidence of malaria obtained a p value of 0.001 <α = 0.05 and an OR value of 4,230 and the variable of hygiene with the incidence of malaria obtained a p value of 0.005 <α = 0.05 and an OR value of 3,294. Thus, there is a relationship between home sanitation and hygiene with the incidence of malaria. Based on the results of the study, it was concluded that the community must always pay attention to good home sanitation and hygiene in order to avoid malaria. Health workers also always provide information through counseling so that they can increase public knowledge regarding the importance of home sanitation and hygiene.

Keywords : Home Sanitation, Hygiene and Malaria Incidence,

INTRODUCTION

Malaria is infectious diseases of global concern that can cause death, especially in high-risk groups such as infants, toddlers and pregnant women and can indirectly reduc number work productivity (WHO, 2023). Although this disease is reported worldwide, tropical areas are endemic for malaria and Indonesia is a tropical area (Benyamin, 2020). This disease is still a public health problem because it often causes Extraordinary Events (KLB), has a broad impact on quality of life and the economy, and can cause death. This disease can be acute, latent or chronic (Ministry of Health of the Republic of Indonesia, 2023).

The increase in malaria cases is thought to be related with physical environmental conditionshouse, namely the ease with which mosquitoes enter the house which is influenced by the ventilation installed with wire mesh, the density of the walls and the presence of a ceiling (Achmadi, 2023). The environmental conditions around the house that support mosquito breeding are the presence or absence of mosquito breeding and transit places around the house. Because seen from the vector bionomics in this area, that during the day Anopheles maculatus

and Anophelesbalabacensisfound resting in bushes and in goat pens made of bamboo (Prabowo, 2022). Its breeding ground is in ditches or gutters and in puddles of clear water. While the behavior of sucking blood since the afternoon and biting the most around 21.00-03.00 (Suriyani, 2023).

The indoor environment plays an important role in the frequency of mosquito bite contact with humans, such as the condition of the house walls, the installation of wire mesh on ventilation, lighting, ceilings and hanging clothes (Soegijanto, 2021). The condition of the home environment from several studystating that there is a relationship with incident malaria. The perforated construction of the house walls allows Forthe entry of mosquitoes into the house so that malaria will be transmitted to the occupants of the house (Soemirat, 2021). The house functions as a place of shelter and as a place to live, therefore health and comfort aspects are important in a residence (Sucipto, 2022).

A part from that, hygiene in the family also plays an important role in preventing incidents.

Malaria. Considering that humans are one of the links in the spread of disease, understanding hygiene, especially personal hygiene, is very important. Therefore, someone who ignores cleanliness and hygiene will cause problems such as malaria (Hernita, 2020). So that hygiene and sanitation cannot be separated from each other because they are closely related. For example, hygiene is good because it does not depend on clothescarelessly but other family members are not aware of this so they continue to do the same thing which has an impact on the incidence of malaria. Thus, hygiene and sanitation are important in preventing malaria (Aditya, 2021).

Initial data survey conducted by researchers in Nerong Village, Kei Besar District South Maluku Tenggara Regency, it is known that the number of malaria cases in September-December 2023 was 82 cases. The results of a preliminary study by interviewing 10 respondents showed that 5 (50%) respondents said they slept without using mosquito nets and mosquito repellent, even respondents had a habit of going out at night to visit and chat with peers/neighbors. 3 (30%) respondents said that they rarely cleaned the yard because they were busy working as farmers from morning to evening. 2 (20%) respondents said that they always maintained cleanliness inside and outside the house to avoid malaria.

The solution to overcome the above problems requires education and public awareness to behave in a healthy way. This malaria case is not only can be anticipated by improving environmental sanitation conditions but must also pay attention to conditioneconomy, lifestyle, knowledge and education for that there needs to be special attention and cooperation between sectors. In addition, health workers in the Health Center can play a more active role in providing education about malaria to the community so that it is expected that there will be an increase in awareness of environmental sanitation and a decrease in the incidence of malaria in the work area of the Health Center.

Based on the background of the problem above, the researcher is interested in conducting research with the title "Analysis of Home Sanitation and Hygiene with Malaria Incidence in Nerong Village, South Kei Besar District, Southeast Maluku Regency".

METHODS

The research design used in this research is quantitative analytical with a case control approach. The population in this study was the entire community in Nerong Village, South Kei Besar District, Southeast Maluku Regency.The sample used in this study was part of the community in Nerong Village, South Kei Besar District, Maluku Regency. Southeastas many as 90 people. The calculation of the sample size uses the case control study and cohort formulas.

Based on the case control study and cohort formula, the minimum sample size required in this study was 45 people. Because the case and control ratio is 1: 1, the number of case

samples is 45 people and the control sample is 45 people, so the total number of research respondents is 90 people South of Southeast Maluku Regency. This research was conducted on May 02-04, 2024.

The data used to test "Analysis of Home Sanitation and Hygiene with Malaria Incidence in Nerong Village, South Kei Besar District, Southeast Maluku Regency" using the chi square statistical test table 2 x 2 ($\alpha = 0.05$) to determine the relationship between the independent and dependent variables. with level confidence $\alpha = 0.05$.

RESULTS

A. Analysis of Characteristic Variables

Table 1. Socio-Demographic Characteristics of All Respondents Studied

Characteristics of Responden	F	%
Age		
≤ 25 Years	2	2.2
25-35 Years	4	4.4
≥ 35 Years	84	93.3
Total	90	100.0
Gender		
Man	23	25.6
Woman	67	74.4
Total	90	100.0
E d u c a t i o n		
SD	52	57.8
JUNIOR HIGH SCHOOL	10	11.1
SENIOR HIGH SCHOOL	28	31.1
Diploma/Bachelor's Degree	0	0.0
Total	90	100.0
W o r k		
Farmer/Housewife	75	83.3
Entrepreneur/Trader	13	14.4
g/Self-Employed		
Private employees	2	2.2
Government employees	0	0
(P N S / T N I / P O L R I)		
T o t a l		100.0

Source: (Research Data Source: Date 02-04 May 2024)

Based on table 1. the majority of respondents (93.3%) were aged ≥ 35 years, with 74.4% of them being women. Most of them only had elementary school education (57.8%) and worked as farmers or housewives (83.3%).

B. Univariate Analysis

Table 2. Data on Home Sanitation, Hygiene and Malaria Incidence in Nerong Village, South Kei Besar District, Southeast Maluku Regency

Data Types	f	%
Home SanitationQualify	43	47.8
Does not meet the Condition	47	52.2
Total	90	100.0
Hygiene		
Fulfil		
Condition	43	47.8

Does not meet the Condition		
	47	52.2
Total	90	100.0
Hygiene		
There isn't any History	45	50.0
There is a History	45	50.0
Amount	90	100.0

(Research Data Source: Date 02-04 May 2024)

Based on table 2 shows 90 respondents, around 52.2% have sub-standard home sanitation and cleanliness. In addition, 50% of respondents have a history of malaria.

C. Bivariate Analysis

Table 3. Results of Cross Tabulation and Data Analysis Between Home Sanitation and Malaria Incidence

Home Sanitation	Malaria Incident						OR	Sig
	No There is History		There is a History		Total			
	F	%	F	%	F	%		
Qualify	26	28.9	11	12.2	37	41.1	4.230	0.001
Does not meet the Condition	19	21.1	34	37.8	54	58.9		

(Research Data Source: Date 02-04 May 2024)

Based on table 3, it shows that houses with inadequate sanitation are approximately 4 times more likely to have a history of malaria compared to houses with good sanitation, with a statistically significant relationship (p=0.001).

Table 4. Results of Cross Tabulation and Data Analysis Between Hygiene and Malaria Incidence

Hygiene	Malaria Incident						OR	Sig
	No There is a History		There is a History		Total			
	F	%	F	%	F	%		
Qualify	28	31.1	15	16.7	43	47.8	3.294	0.005
Does not meet the Condition	17	18.9	30	33.3	47	52.2		

(Research Data Source: Date 02-04 May 2024)

Based on Table 4, it shows that houses with inadequate hygiene are approximately 3.3 times more likely to have a history of malaria compared to houses with good hygiene, with a statistically significant relationship (p=0.005).

DISCUSSION

A. Home Sanitation in Nerong Village, South Kei Besar District, Southeast Maluku Regency

. A healthy environment is a basic human need in maintaining the sustainability of life, so humans must try to maintain the quality of the environment so that it remains good. Comfortable and sustainable environmental conditions will have an impact positive for its maintenance qualityenvironment. For this reason, the participation of the wider community is absolutely necessary to ensure the maintenance of conditionthe environment remains good/healthy. To see this role, information has been collected from the community through research activities that have been carried out in Nerong Village. In these activities, the community's enthusiasm in responding was seen problemsanitation of their residential environment. Based on research which has been carried out on the Nerong Village community, it appears that the community's understanding of environmental sanitation is still very shallow.

This condition is caused by problems in people's lives. Especiallydifficult economy. For the people of Nerong village, just being able to survive is an extraordinary thing. Environmental and sanitation issues are still at the bottom of the list of thoughts. The hardships of life also foster an attitude of not wanting to be difficult/bothered in meeting sanitation needs. For example, the problem of housing, the condition of the house from the existing condition looks very concerning. For them, being able to take shelter from the heat of the sun and the cold of the rain is enough.

Based on information from the Nerong Village community, sanitation conditions show several major problems. There is a lack of clean water, no toilets in residents' homes, and no facilities.

Public toilets. The construction of public toilets has not been carried out due to limited funds. Residents usually defecate in the forest or the sea, which they consider more practical, because they do not have the funds to build toilets at home. In addition, there is no adequate waste disposal site, so garbage is often scattered in the yard. Wastewater disposal is also a problem; many residents only make small ditches 1-2 meters long to drain waste from bathrooms and washing areas, while some waste is left to pool in the yard in the hope that it will seep into the ground.

Based on resultsThe study found that home sanitation in Nerong Village, Kei Besar Selatan District, Southeast Maluku Regency, was known by most respondents, namely 53 (58.9%) respondents in the category of not meeting the requirements. This shows that Unqualified home sanitation is a factor causing malaria. This is indicated by ventilation that is not fitted with wire mesh which can make it easier for mosquitoes to enter the house. The ceiling or upper wall room divider with a roof made of wood, internit or fine bamboo weave as a barrier to mosquitoes entering the house is seen from the presence or absence of a ceiling in all or part of the room in the house. The quality of the walls that are not tight if the walls of the house are made of coarse bamboo weave or wood/boards with holes of more than 1.5 mm^2 will make it easier for mosquitoes to enter the house.

The results of this study are supported by research by Delfan (2021), in his research journal it was shown that the physical condition of the house is closely related to the incidence of malaria, especially regarding whether or not mosquitoes can easily enter the house.

Ventilation that is not fitted with wire mesh can make it easier for mosquitoes to enter the house. The ceiling or upper wall room divider with a roof made of wood, internit or fine bamboo weave as a barrier to mosquitoes entering the house is seen from the presence or absence of a ceiling in all or part of the room in the house. The quality of the walls that are not tight if the walls of the house are made of coarse bamboo weave or wood/boards that have holes of more than 1.5 mm^2 will make it easier for mosquitoes to enter the house.

B. Hygiene in Nerong Village, South Kei Besar District, Southeast Maluku Regency

Hygienewhich is found in the Nerong Village community is still very lacking. This is indicated by the community rarely opening the bedroom windows, the family room in the morning, throwing away baby and toddler feces behind the house and even throwing them into the river and garden, not throwing garbage in the right place because there are no garbage bins, even people rarely clean their yards so there is still a lot of garbage scattered around. Cleaning environmentaround is an unusual activity and in the yard or behind the house as a place of disposal that does not bother the community's understanding of the problem of garbage and wastewater disposal is also still very low. Garbage around the house is also a common thing, they consider cleaning up garbage is the responsibility of the fathers. They think there is no point in cleaning up garbage because after being cleaned, the garbage will reappear, because it will be carried by the wind from another place or the garbage that has been thrown into the empty land will return. For the people of Nerong Village, burning dry garbage (managing on-site) is something that is not commonly done.

Based on resultsThe study found that hygiene in Nerong Village, Kei Besar Selatan District, Southeast Maluku Regency, was known by most respondents, namely 47 (52.2%) respondents in the category of not meeting the requirements. This shows that family hygiene that does not meet the requirements is characterized by the behavior of family members who do not maintain the cleanliness of the house and surrounding environment, do not maintain the quality of water and air by using filters and ventilation, littering, hanging clothes. This can certainly prevent the transmission of malaria.

The theory that supports the researcher's findings according to Notoatmodjo's theory (2019), states that hygiene is a health effort by maintaining and protecting the cleanliness of the subject, such as wash hands with clean water and soap to protect hand hygiene, wash dishes for plate hygiene, throw away damaged food parts to protect the integrity of the food as a whole, clean the inside and outside of the house, avoid hanging clothes or letting clothes pile up in the room because it can be an ideal place for mosquitoes to hide. Take 3M preventive steps to eradicate mosquito nests, namely draining water reservoirs regularly, burying unused used goods, and covering water reservoirs.

Based on resultsThe research concluded that regarding the description of the behavior of the Nerong village community regarding hygiene, there are still many people who have the habit of going out of the house at night without wearing closed clothing, the behavior of residents who hang out Clothescarelessly even clothes scattered, the results of observations that have been carried out show that many people still throw rubbish carelessly.

In addition, it is true that people have different habits ranging from bathing, washing, throwing away garbage, to caring for family members. There are people who still pile up their garbage in the yard that they do not immediately throw away. From the results of the researcher's opinion, it can be seen that they do not yet understand about good personal hygiene knowledge and how to maintain cleanliness and there are still many things that are not done by the community to create personal hygiene, this is related to the lack of funds and facilities available.

Public knowledge about personal hygiene is still low, such as the fact that there is still rubbish that is not immediately thrown away in the yard, there is still rubbish that is not placed in a closed place, there is no waste sorting for wet and dry waste and the condition around the house is still not well maintained. In addition, residents in defecation activities are carried out in the forest or sea which they think is more practical. So from a health perspective, the results of the observation can be concluded that the personal hygiene of the community is still not good so that it can cause germs.

C. Malaria Incident in Nerong Village, South Kei Besar District, Southeast Maluku

Regency

Place developmentAnopheles mosquitoes as vectors of malaria disease that are around settlement population. Breeding places mosquitoAnophelesthe most popular include ponds, river estuaries, and swamps (Irianto, 2021). In addition That existence breeding ground mosquito in around the house is a risk factor the occurrence transmission malaria. Stagnant water is an ideal place for Anopheles mosquitoes to breed (Kasjono, 2019). With the increase in breeding sites, soThe population of Anopheles mosquitoes will increase (Pribadi, 2022). This is certainly very risky in increasing the chances of contact between mosquitoes as malaria vectors and people whose houses are located around puddles. If the density of mosquitoes around the house is high and supported withhuman availability, it will increase the vector capacity, so that the possibility of people around puddles to contract malaria will be greater. In addition, the existence of bushes is a good place for mosquitoes to rest when looking for blood (Slamet, 2019).

The results of this study are supported by research by Lestari (2023), in her research journal showed that more pregnant women experienced malaria as much as 65.2%, there were puddles of water as much as 50.0%, there were bushes as much as 54.3%, did not use wire mesh as much as 52.2%, did not use ceilings as much as 60.9% and did not use tight walls as much as 56.5%. In line with Hernita's research (2020), in her research journal it was shown that out of 50 people with poor environmental sanitation conditions, 9 people were positive for malaria and 41 people were negative.

Based on the research results, it is known that the incidence of malaria in Nerong Village, Kei Besar Selatan District, Southeast Maluku Regency, is known that half of the respondents, namely 45 (50.0%) respondents are in the category of having a history and half of the respondents, namely 45 (50.0%) respondents are in the category of having no history. This is indicated by home sanitation and hygiene that do not meet conditions so that family members are at risk of contracting malaria. Family members also rarely attend health counseling and do not even seek information through electronic media, print media about malaria prevention. In addition, from the results of observations, it was obtained that the construction of the house walls with holes allows mosquitoes to enter the house so that malaria will be transmitted to the occupants of the house. In addition, there are brackish water swamps, unkempt fish ponds that are overgrown with moss, lagoons, river estuaries that are overgrown with aquatic plants and puddles on the banks of rivers with slow or stagnant flows that become breeding grounds for anopheles sundaicus mosquitoes.

Apart from that, there are also environmental factors, namely mosquito breeding grounds and large livestock farming, then there are behavioral factors that have a very big influence, such as not using mosquito nets when sleeping at night, not using mosquito repellent when going to bed at night, not using repellents when outside the house at night, not installing mosquito netting in people's homes or the environment, clothes hanging on clotheslines inside the house become a shady and humid place. This condition is a good place for Anopheles sp. mosquitoes to rest.

Researchers assume that the lack of respondent behavior regarding malaria prevention is influenced by knowledge factors. In addition, environmental factors are also very dominant in supporting malaria cases. The existence of livestock pens under or next to the house can trigger malaria cases. In addition, it was found that the construction of the respondent's house was made of wooden/plank walls and had many gaps that became the entry point for mosquitoes. malaria. If a person's knowledge is low, it can support a person not behaving well and correctly.The results of the cross-tabulation between work and the incidence of malaria in Nerong Village, South Kei Besar District, Southeast Maluku Regency, showed that almost half of the respondents worked as farmers/housewives, namely 38 (42.2%) respondents in the categoryThere is history.Based on the odds ratio value using the logistic regression test,

the value (OR)/Exp (B) obtained was 1.309, which means that the risk is at least greater by 1,309 times the incidence of malaria. While the level of significance obtained is 0.649 > 0.05, then H0 is accepted and H1 is rejected.

The results of the facts and theories that have been explained, the researcher argues that efforts that can be made to protect against mosquito bites at night in general are to use mosquito repellent as a prevention of mosquito bites. However in the use of mosquito repellent must be done carefully because it can cause allergies in certain people. One alternative that can be done is to utilize anti-mosquito plants such as basil, zodia, lavender, citronella and geranium. The oil from these plants has been proven to be used as a repellent when used on the skin. The combination of essential oils from citronella grass, eucalyptus and sweet basil provides effective results for protection from mosquito bites.

In addition, the habit of closing doors and windows after sunset is a practice to prevent Anopheles mosquitoes from entering the house, so that the occupants of the house are protected from mosquito bites. As is known, the activity of Anopheles mosquitoes has begun to be seen since dusk, so that respondents who do not close doors and windows or holes other than doors and windows at dusk make it easier for mosquitoes to enter the house and increase the risk of malaria mosquito bites.

CONCLUSION

There is a significant relationship between environmental sanitation and the occurrence of maara in Nerong Village, South Kei Besar District, Maluku Regency. Southeastobtained a p value of 0.001 < α = 0.05 with an odds ratio (OR) value of 4,230, while the relationship between hygiene and malaria incidence in Nerong Village, South Kei Besar District, Maluku Regency Southeastthe p value obtained was 0.005 < α = 0.05 while the odds ratio (OR) value obtained was 3,294.

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