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Factors Related to the Presence of *Aedes SP Larvae* in Simpang III Sipin Village in 2024

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Abstract.*Dengue Hemorrhagic Fever (DHF) remains a major public health issue in Indonesia, particularly in endemic areas like Simpang III Sipin Village. This disease is transmitted by Aedes sp mosquitoes, and the presence of their larvae is a key indicator of the potential spread of DHF. Environmental conditions, such as water reservoirs and humidity, alongside community behaviors, play significant roles in supporting the growth of these mosquito larvae. Therefore, research is needed to identify the factors influencing the presence of Aedes sp larvae. Methods: This study utilized a cross-sectional design with a quantitative approach. The sample consisted of 143 households, selected using purposive sampling techniques. Data were collected via questionnaires and direct observations. Additionally, measurements of environmental conditions such as air humidity and temperature were taken using a hygrothermometer. The variables under study included knowledge, attitudes, behavior regarding water reservoir drainage (TPA), number of TPAs, air humidity, and air temperature. Results: Data analysis was conducted using the Chi-Square statistical test to determine the relationships between the variables. The results indicated that factors like knowledge level (p = 0.008), attitude (p = 0.008), behavior related to draining water reservoirs (p = 0.001), number of water reservoirs (p = 0.013), and air humidity (p = 0.004) were significantly related to the presence of Aedes sp larvae. However, air temperature did not show a significant relationship (p = 0.675). Conclusion: High humidity environments encourage the growth of mosquito larvae, and insufficient knowledge and inadequate preventive behaviors contribute to increased mosquito populations, exacerbating the risk of DHF transmission.*

Keywords *: Aedes SP , Community behavior, Dengue Hemorrhagic Fever, Environmental factors,Simpang III Sipin Village.*

1. INTRODUCTION

Dengue, known to the public as dengue fever, is a disease caused by a viral infection that is spread through mosquito bites. In recent decades, the number of dengue cases has increased significantly in many countries around the world (Ministry of Health of the Republic of Indonesia, 2022) . DHF is an infectious disease triggered by the dengue virus and transmitted through mosquito bites, especially *Aedes aegypti* , as well as several other mosquito species such as *Aedes albopictus* and *Aedes* polynesiensis (Hidayati et al., 2024) . The *Aedes aegypti* mosquito has a dengue distribution that extends to almost all areas, following its distribution pattern both in rural areas, urban areas, and in densely populated areas (Susmaneli et al., 2024)

Based on the 2023 Indonesian Health Survey (SKI) report, there were 877,531 cases of dengue fever in Indonesia and 11,588 cases of dengue fever were recorded in Jambi Province (Indonesia, 2023) . And according to the Jambi City Health Office, in 2021 there were 131 cases of dengue fever in Jambi City. This case increased sharply in 2022 with 298 cases. In

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2023, there was a decrease of 4 cases, so that the incidence of dengue fever became 294 cases. However, in 2024 there was a fairly high spike in cases compared to the previous year, where until June there were 398 cases of dengue fever (Jambi City Health Office, 2023)

In Jambi City, there are 20 health centers, where the Paal V Health Center is one of the health centers with the number of DHF cases showing a fluctuating tendency in the last 3 years. The number of DHF cases in 2021 was 12 cases, in 2022 there was an increase in cases of 36 cases in 2023 cases decreased again compared to the previous year, which was 23 cases, and again experienced a fairly high increase in June 2024 as many as 44 DHF incidents spread across 3 sub-districts, namely Paal V Sub-district 12 cases, Sukakarya Sub-district 6 cases and Simpang III Sipin Sub-district 26 cases. Based on these data, Simpang III Sipin Sub-district is the sub-district with the highest DHF cases in the Paal V Health Center work area (Jambi City Health Office, 2023) .

The presence of larvae in an area can be identified through the Larvae Free Index (ABJ). ABJ is the percentage of houses or buildings where no mosquito larvae were found, obtained by dividing the number of houses free of larvae by the total number of houses inspected, then multiplied by 100% (Ministry of Health, 2023) . ABJ is one of the parameters used to measure or determine the likelihood of an Extraordinary Event (KLB) occurring in an area through a larvae survey. (Kastari & Prasetyo, 2022) .

Based on data from the Paal V Health Center, ABJ at the Paal V Health Center in 2021 was 93.97%, in 2022 it was 94.31, and in 2023 it was 96.39% and in 2024 as of June in each sub-district in the Paal V Health Center working area, namely in the Simpang III Sipin sub-district it was 93.87%, in the Paal V sub-district it was 95.02%, and in the Sukakarya sub-district it was 95.10%. Based on these data, it can be seen that the Simpang III Sipin sub-district has a low ABJ figure, namely 93.87% of the 95% indicator. The low ABJ needs to be considered because it can be a cause of the emergence of DHF (*Paal V Health Center Profile* , 2023) . Based on this background, the author is interested in conducting research on factors related to the presence of *Aedes sp larvae* in Simpang III Sipin Village in 2024. The purpose of this study was to determine the factors related to the presence of *Aedes sp larvae* with the variables studied, namely knowledge, attitude, draining TPA, number of TPA, humidity, air temperature.

2. LITERATURE REVIEW

. DBD is an infectious disease triggered by the dengue virus and transmitted through mosquito bites, especially *Aedes aegypti* , as well as several other mosquito species such as *Aedes albopictus* and *Aedes* polynesiensis. (Hidayati et al., 2024) , DHF is a disease that has the potential to cause death quickly. One of the clinical symptoms of DHF is high body temperature that occurs for up to 27 days. When sufferers do not show signs or symptoms of epistaxis, there are usually specific signs in the form of red spots (*pteechiae*) on their bodies. (Agnesia et al., 2023) .

Aedes sp mosquito eggs will hatch into larvae in water with temperatures ranging from 20˚C to 40˚C within 1 to 2 days. The larval growth process is influenced by various factors, such as environmental temperature, type of breeding ground, water quality, and nutritional content in it. Under optimal conditions, larvae will develop into pupae in 4 to 9 days, then turn into adult mosquitoes in 2 to 3 days. Overall, the development cycle from eggs, larvae, pupae, to adult mosquitoes takes about 7 to 14 days (Elviani et al., 2020) .

Aedes sp larvae breed in clean puddles of water, including: Artificial (Artificial) Artificial breeding places are artificial water reservoirs that are used by *Aedes mosquitoes* as breeding places, such as: bathtubs, buckets, dispensers, refrigerators, used tires, flower pots/vases, cans, plastic, etc. , Natural. Natural breeding places are breeding places for aedes which are used as natural breeding places. Examples of places, such as mosquito breeding places in natural places, are plants that can hold water, leaf axils, coconut shells, bamboo holes, or leaf stalks or plants that are classified as phytotelmata (Ayuningrum, 2019) .

Aedes sp larvae is influenced by several factors including knowledge, attitudes, behavior in draining landfills, the number of landfills, air humidity and air temperature. Susmaneli's (2024) research shows a relationship between the level of knowledge and the presence of mosquito larvae. The results of this study indicate that *Aedes aegypti larvae* are more commonly found in respondents with low levels of knowledge. Many respondents do not understand the natural breeding locations of *Aedes aegypti larvae* and the factors that support their growth in certain puddles. Therefore, cooperation is needed in various activities that can add information and increase public knowledge (Susmaneli et al., 2024) .

Sari's research (2021) regarding factors related to the presence of *Aedes mosquito larvae* in Pulau Jambu village, Kampar Health Center working area, stated that there was a relationship between attitudes towards the presence of *Aedes mosquito larvae.* (Sari, 2021) , and other researchers Nariswara et al (2021) showed that the attitude of mosquito larvae cadres

towards preventing DHF in the areas that were the focus of the One House One Mosquito Repellent movement by the Candilama Health Center, Semarang City (Nariswara et al., 2021)

Research by Setiawan et al. (2023) shows that there is a relationship between the behavior of draining landfills and incidents of Dengue Hemorrhagic Fever (DHF) at the Umbulharjo Health Center. (Setiawan et al., 2023) . Wisfer's research (2020) shows that there is a relationship between the number of landfills and the presence of *Aedes aegypti larvae.* This study shows that houses with many landfills are at higher risk of larvae than houses with few landfills. This is because the presence of water containers contributes significantly to the population of *Aedes aegypti mosquitoes.* or the more water containers available, the more breeding locations and the denser the population will be (Wisfer et al., 2020) .

Research by Jannah et al. (2021) on the relationship between the physical environment and the presence of *Aedes sp larvae* in Balleanging Village, Balloci District, Pangkep Regency, showed that humidity was significantly related to the presence of *Aedes sp larvae.* (Jannah et al., 2021) , *Research by Mulyani et al. (2022) shows that temperature is related to the presence of Aedes sp* mosquito larvae in containers (bathtubs) (Mulyani et al., 2022) .

3. METHODS

This study is an observational study with a *cross-sectional design* through a quantitative approach. This study was conducted in Simpang III Sipin Village. The population in this study were households with heads of families (fathers or mothers) as respondents in Simpang III Sipin Village with a sample size of 143 samples. The sampling technique used was *purposive sampling* . Data collection measuring instruments, using questionnaire sheets, observation sheets and *hygrothermometers.* The dependent variable in this study is the presence of *Aedes sp larvae,* while the independent variables are knowledge, attitude, draining landfills, number of landfills, humidity, air temperature.

4. RESULTS

Relationship between Knowledge and the Existence of *Aedes sp Larvae*

Table 1. Relationship between Knowledge and the Presence of *Aedes sp. Larvae* in Simpang III Sipin Village in 2024

Knowledge	***Aedes sp* larvae**						0R (95% CI)	P-value
	There is		There isn't any		Total			
	n	%	n	%	n	%		
Not enough	20	51.3	19	48.7	39	100	3,002	0,008

Baik	27	26,0	77	74,0	104	100	1,396-6,456	
Total	47	32,9	96	67,1	143	100		

The results of the analysis in table 1 , regarding respondents' knowledge of the existence of *Aedes sp larvae*, show that out of 39 respondents with low knowledge, there were 20 respondents (51.3%) who found *Aedes sp larvae*. While out of 104 respondents with good knowledge, there were 27 respondents (26.0%) who found *Aedes sp larvae* .

Based on table 1 , the results of the *Chi-Square* statistical test were obtained with a value of p = 0.008 (p <0.05), which indicated a statistically significant relationship between the level of knowledge and the presence of *Aedes sp larvae* . Obtained from the statistical test, the OR (Odds Ratio) value = 3.002, which means that respondents with less knowledge have a 3 times greater risk of finding *Aedes sp larvae* compared to respondents with good knowledge.

Relationship between Attitude and the Presence of *Aedes sp Larvae*

Table 2. Relationship between Attitude and the Presence of *Aedes sp. Larvae* in Simpang III Sipin Village in 2024

Attitude	***Aedes sp.* larvae**						**0R (95% CI)**	**P-value**
	Ada		**None**		**Total**			
	n	%	n	%	n	%		
Negative	30	44.8	37	55.2	67	100	2,814 1,365-5,799	0.008
Positive	17	22.4	59	77.6	76	100		
Total	47	32.9	96	67.1	143	100		

The results of the analysis in table 2 , regarding the respondents' attitudes towards the presence of *Aedes sp larvae,* show that out of 67 respondents with negative attitudes, there were 30 respondents (44.8%) who found *Aedes sp larvae.* While out of 76 respondents with positive attitudes, there were 17 respondents (22.4%) who found *Aedes sp larvae* .

Based on table 2 , the results of the *Chi-Square* statistical test were obtained with a value of p = 0.008 (p <0.05), which indicated a statistically significant relationship between attitudes and the presence of *Aedes sp larvae* . Obtained from the statistical test, the OR (Odds Ratio) value = 2.814, which means that respondents with negative attitudes have a 2.8 times greater risk of finding *Aedes sp larvae* compared to respondents with positive attitudes.

3. Relationship between Landfill Draining Behavior and the Presence of *Aedes sp Larvae*

Table 3. Relationship between Draining of Landfill and the Presence of *Aedes sp Larvae* in Simpang III Sipin Village in 2024

Landfill Drainage Behavior	*Aedes sp.* larvae						0R (95% CI)	P-value
	Ada		None		Total			
	n	%	n	%	n	%		
Tidak	16	64.0	9	36.0	25	100	4,989 2,001-12,442	0.001
Yes	31	26.3	87	73.7	119	100		
Total	47	32.9	96	67.1	143	100		

The results of the analysis in table 3 , regarding the action of draining the landfill with the presence of *Aedes sp larvae,* show that out of 25 respondents who did not drain the landfill, there were 16 respondents (64.0%) who found *Aedes sp larvae.* While out of 119 respondents who drained the landfill, there were 31 respondents (26.3%) who found *Aedes sp larvae* .

Based on table 3 , the results of the *Chi-Square* statistical test were obtained with a value of p = 0.001 (p <0.05), which indicated a statistically significant relationship between draining the landfill and the presence of *Aedes sp larvae* . Obtained from the statistical test, the OR (Odds Ratio) value = 4.989, which means that respondents who do not drain the landfill have a 4.9 times greater risk of finding *Aedes sp larvae* compared to respondents who drain the landfill.

Relationship between the Number of Landfills and the Presence of Aedes *sp Larvae*

Table 4. The Relationship between the Number of Landfills and the Presence of *Aedes sp Larvae* in Simpang III Sipin Village in 2024

Amount TPA	*Aedes sp.* larvae						0R (95% CI)	P-value
	Ada		None		Total			
	n	%	n	%	n	%		
Banyak	34	42.0	47	58.0	81	100	2,727 1 , 283-5 , 796	0.013
A little	13	21.0	49	79.0	62	100		
Total	47	32.9	96	67.1	143	100		

The results of the analysis in table 4, regarding the number of landfills with the presence of *Aedes sp larvae,* show that out of 81 respondents who have a large number of landfills, there are 34 respondents (42.0%) who were found to have *Aedes sp larvae. While out of 62 respondents who have a small number of landfills, there are 13 respondents (21.0%) who were found to have Aedes sp* larvae .

Based on table 4 , the results of the *Chi-Square* statistical test were obtained with a value of p = 0.013 (p <0.05), which indicated a statistically significant relationship between

the number of TPA and the presence of *Aedes sp larvae* . Obtained from the statistical test, the OR (Odds Ratio) value = 2.272, which means that respondents with a large number of TPA have a 2.2 times greater risk of finding *Aedes sp larvae* compared to respondents with a small number of TPA.

Relationship between Humidity and the Presence of *Aedes sp* Larvae

Table 5. Relationship between Humidity and the Presence of *Aedes sp Larvae* in Simpang III Sipin Village in 2024

In Kelemba	*Aedes sp.* larvae						0R (95% CI)	P-value
	Ada		None		Total			
	n	%	n	%	n	%		
Berisiko	43	39.8	65	60.2	108	100	5 , 127 1 , 689-15 , 561	0.004
No Risk	4	11.4	31	88.6	35	100		
Total	47	32.9	96	67.1	143	100		

The results of the analysis in table 5 , regarding air humidity with the presence of *Aedes sp larvae*, show that out of 108 respondents who have risky air humidity, there are 43 respondents (39.8%) who were found to have *Aedes sp larvae. while out of 35 respondents who have non-risky air humidity, there are 4 respondents (11.4%) who were found to have Aedes sp* larvae .

Based on table 5 , the results of the *Chi-Square* statistical test were obtained with a value of p = 0.004 (p <0.05), which indicated a statistically significant relationship between air humidity and the presence of *Aedes sp larvae* . Obtained from the statistical test, the OR (Odds Ratio) value = 5.127, which means that respondents with risky air humidity have a 5.1 times greater risk of finding *Aedes sp larvae* compared to respondents with non-risky air humidity.

The Relationship Between Air Temperature and the Presence of *Aedes sp* Larvae

Table 6. Relationship between air temperature and the presence of Aedes sp larvae in Simpang III Sipin Village in 2024

Suhu Udara	*Aedes sp.* larvae						0R (95% CI)	P-value
	Ada		None		Total			
	n	%	n	%	n	%		
Berisiko	21	30.4	48	69.6	69	100	0.808 0.401-1.627	0.675
No Risk	26	35.1	48	64.9	74	100		
Total	47	32.9	96	67.1	143	100		

The results of the analysis in table 4.19, regarding air temperature with the presence of *Aedes sp larvae*, show that out of 69 respondents who have risky air temperatures, there are 21

respondents (30.4%) who were found to have *Aedes sp larvae. while out of 74 respondents who have non-risky air temperatures, there are 26 respondents (35.1%) who were found to have Aedes sp* larvae .

Based on the results of the Chi-Square statistical test in table 4.19, p=0.675 (p>0.05) was obtained, which means there is no relationship between air temperature and the presence of *Aedes sp larvae* .

DISCUSSION

The relationship between knowledge and the presence of *Aedes sp larvae*

Based on the results of the study, it was found that 77 respondents (74%) who had good knowledge did not find *Aedes sp larvae.* while in 20 respondents (51.3%) with poor knowledge levels, *Aedes sp larvae were found.* The results of the study showed that community knowledge with *Aedes sp larvae* in Simpang III Sipin sub-district in 2024 had a relationship with a p-value = 0.008 (p <0.05).

This study is relevant to the study of Muh. Jusman & Sitti Nurhayati (2021) which was conducted at the Sangurara Health Center which explained that the level of knowledge with the presence of *Aedes larvae* was related to a p-value of 0.000 (Rau & Nurhayati, 2020) . The study by Auliya Annisa & Anwar Arbi (2024) conducted in the Meukek Health Center Work Area, South Aceh Regency, stated that knowledge with the presence of *Aedes mosquito larvae* was related to a p -*value* of 0.002 (Farma & Arbi, 2024) . The study by Marni Juliastari et al. (2021) stated that knowledge with the presence of mosquito larvae was related to *a p-value of* 0.001 (Juliastari et al., 2021) . And the research is not relevant to Simamemare's research (2019), which stated that the level of knowledge and the presence of larvae were not related, with a *p-value of* 0.128 (Simaremare et al., 2020) .

The results of the study illustrate that respondents generally have a high school education level. In addition, most people in Simpang III Sipin Village have understood about *Aedes sp. larvae* and mosquito nest eradication methods, which they obtained through counseling from the health center. Therefore, the level of knowledge of the Simpang III Sipin Village community is classified as good regarding mosquito nest eradication efforts which include activities such as cleaning water containers regularly, storing water in closed containers, and sprinkling abate powder into water containers. According to Notoatmodjo (2012), the level of education plays a role in shaping a person's knowledge, which ultimately influences their behavior. A person with good knowledge tends to have more consistent and long-lasting behavior than behavior that is not based on knowledge. Based on the study,

knowledge in Simpang III Sipin Village is mostly good, but there are still some respondents who have less knowledge, therefore it is hoped that the relevant agencies will improve education to the community regarding *Aedes sp. larvae* and mosquito nest eradication methods. Counseling should be carried out routinely with more interactive methods to increase public understanding, such as using posters about the importance of preventing dengue fever and how to eradicate it, and also creating sanitation clinics, namely facilities that play a role in improving the quality of public health through prevention and control of environmentally based diseases**.**

Relationship between attitude and the presence of *Aedes sp larvae*

Based on the results of the study, it was found that 96 respondents (67.1%) who had a positive attitude did not find *Aedes sp. larvae.* While in 33 respondents (44.8%) with a negative attitude, *Aedes sp. larvae were found.* The results of the study showed that the attitude of the community with *Aedes sp. larvae* in Simpang III Sipin Village in 2024 had a relationship with a p-value = 0.008 (p <0.05).

The results of this study are relevant to the research of Herlina Susmaneli & Ummi Hidayati (2024), stating that attitudes and the presence of larvae have a relationship with a p-value of 0.0001 (Susmaneli et al., 2024) . Sari's research (2021) conducted in Pulau Jambu Village, Kampar Health Center Working Area, stated that attitudes and the presence of *Aedes mosquito larvae* have a relationship with a p- *value of* 0.001 (Sari, 2021) . Marni Juliastari et al.'s research (2021) stated that knowledge and the presence of mosquito larvae have a relationship with *a p-value of* 0.001 (Juliastari et al., 2021) . This study is not relevant to Auliya Annisa's research (2024) which stated that attitudes and the presence of mosquito larvae have no relationship with *a p-value of* 0.071 (Farma & Arbi, 2024) .

The results of the analysis of the relationship between attitudes and the presence of *Aedes sp larvae* are in accordance with existing theories, respondents who have negative attitudes are more at risk of having *Aedes sp larvae* in their residential environment, because attitudes regarding the presence of *Aedes sp larvae* can influence respondents in prevention through eradication of mosquito nests. Respondents who have positive attitudes will have better countermeasures so that the risk of having *Aedes sp larvae* is smaller.

According to the researcher's assumption, the negative attitude of respondents is due to the lack of public awareness of the importance of supporting dengue fever prevention measures due to daily activities and habits in life. The negative attitude of respondents is due to the lack of public concern for the cleanliness of the surrounding environment which is one of the factors that influences the presence of *Aedes sp larvae* in Simpang III Sipin Village. Therefore,

educational activities regarding the eradication of mosquito nests and prevention of dengue fever should be carried out comprehensively by the health center in Simpang III Sipin Village, by providing *Training of Training* (TOT) training to cadres in each settlement. This education is expected to bring about positive changes in attitudes in the community of Simpang III Sipin Village towards efforts to eradicate mosquito nests in the future.

The relationship between landfill drainage and the presence of *Aedes sp larvae*

Based on the results of the study, it was found that 87 respondents (73.7%) who drained the landfill did not find *Aedes sp. larvae.* While in 16 respondents (64%) who did not drain the landfill, Aedes sp. larvae were found . The results of the study showed that draining the landfill with the presence of *Aedes sp. larvae* in Simpang III Sipin sub-district in 2024 had a relationship with a p-value = 0.001 (p <0.05).

The results of this study are in line with Lenny Mulyani, et al. (2022) who stated that draining containers with the presence of *Aedes larvae* has a relationship with a p *value of* 0.008 (Mulyani et al., 2022) . This is relevant to the research of Darius Tandi et al. (2020) in Liabuku Village which stated that draining water reservoirs with the presence of mosquito larvae had a relationship with a p *value of* 0.000 (Abang et al., 2020) , Buyung RB's research (2024) conducted in Persiakan Village, Tebing Tinggi City stated that cleaning landfills with the presence of mosquito larvae had a relationship with a p value = 0.007 (Daulay et al., 2024) .

According to the researcher's assumption, the respondents who did not drain the landfill were due to the low positive attitude of the respondents in eradicating mosquito nests, which caused the respondents to have no desire to take action to control *Aedes sp larvae* , one of which was by draining the landfill. Draining the landfill is one of the physical methods in controlling *Aedes sp mosquito larvae* . Ideally, water containers are cleaned every week. The habit of cleaning water containers more than once a week provides an opportunity for *Aedes sp mosquito larvae* to breed into adult mosquitoes. Therefore, the community should drain and brush the walls of the landfill at least once a week to prevent the growth of *Aedes sp mosquito larvae* . In addition to draining the landfill, the community is also expected to cover water storage containers and reprocess used goods that can hold rainwater and use larvicide or fish that eat larvae in places that are not easy to clean routinely.

The relationship between the number of landfills and the presence of *Aedes sp larvae*

Based on the results of the study, it was found that 49 respondents (79.0%) with a small number of TPA did not find *Aedes sp larvae.* while in 34 respondents (42%) with a large

number of TPA, Aedes sp larvae were found . The results of the study showed that the number of TPA with *Aedes sp larvae* in Simpang III Sipin sub-district in 2024 had a relationship with a p-value = 0.013 (p <0.05).

This study is relevant to the study of Indra Chahaya, et al. (2023) which showed that the number of landfills with the presence of *Aedes larvae* in Tebing Tinggi sub-district has a relationship with a value of p = 0.009 (Sari, 2021) . This is relevant to the study of Wisfer, et al. (2020) which revealed that the number of landfills with the presence of larvae in the endemic area of DBD in Makassar city has a relationship with a value of p = 0.002 (Wisfer et al., 2020) . And not relevant to the study of Buyung RB which stated that the number of landfills with the presence of larvae has no relationship with a value of p = 0.143 (Daulay et al., 2024) .

Based on the results of direct observations in the field, many people were found to have more than three water reservoirs with the aim of storing more water used for daily needs. Especially housewives who do a lot of activities in the kitchen such as cooking and washing, besides that most people in the Simpang III Sipin sub-district to meet their needs for water to water their plants or yards tend to leave containers such as buckets and drums placed in front of the house in an open state. According to the community's view, the habit of storing water is one way to save water. From the results that researchers found, it is hoped that the community should optimize the use of the number of TPA so that it is not excessive, because the more TPA, the higher the potential for the development of *Aedes sp mosquito larvae* . and it is hoped that all water reservoirs, such as buckets, drums, and water tanks, must be tightly closed to prevent *Aedes sp mosquitoes* from laying eggs in them and use tight lids or special nets so that the water remains clean and free from mosquito larvae.

The relationship between humidity and the presence of *Aedes sp larvae*

Based on the results of the study, it was found that 31 respondents (88.6%) with air humidity were not at risk of not finding *Aedes sp larvae.* while in 43 respondents (39.8%) with air humidity were at risk of finding *Aedes sp larvae.* The results of the study showed that air humidity with *Aedes sp larvae* in Simpang III Sipin sub-district in 2024 had a relationship with a p-value = 0.004 (p <0.05).

This study is relevant to the study conducted by Miftahul Jannah, et al. (2021), which revealed that humidity and the presence of *Aedes sp* . larvae in Balleanging Village, Ballocci District, Pangkep Regency have a relationship with a p- *value of* 0.001 (Jannah et al., 2021) . This is in accordance with the research of Heru Listiano, et al. (2021) which revealed that humidity and the presence of mosquito larvae have a relationship with *a p value of* 0.038

(Listiono et al., 2021) . Faradillah Pratiwi's research (2018) conducted in RW 06, Karang Anyar Village stated that there is a relationship between air humidity and the presence of mosquito larvae with a p value = 0.000 (Pratiwi, 2018) . And this study is not relevant to the research of Lenny Mulyani (2022) which revealed that humidity and the presence of *Aedes sp larvae* in Kartasari Village had no relationship with a *p value of* 0.252 (Mulyani et al., 2022) .

Based on the results of field observations, generally the respondents' bathrooms have a risky humidity level and are generally positive for larvae. The results of direct observations in the field show that generally the respondents' bathrooms have limited air circulation and a small amount of ventilation. This condition affects the entry of sunlight and air circulation, which has an impact on the humidity level in the bathroom. Therefore, people are advised to increase ventilation in their homes, especially in the bathroom, so that air circulation is better and humidity is not too high. If the bathroom is too closed, use glass or a transparent roof in certain parts so that sunlight can enter, and for health agencies, it is necessary to conduct socialization to the community regarding the relationship between humidity and the breeding of *Aedes sp mosquitoes* and the mosquito nest eradication program (PSN) must continue to be carried out with an emphasis on the importance of maintaining air humidity within safe limits.

The relationship between air temperature and the presence of *Aedes sp larvae*

Air temperature is an important factor that affects the growth and development of *Aedes sp mosquito larvae* . The optimal temperature for mosquito breeding ranges from 25°C to 30°C **.** Very low or very high temperatures have the potential to hinder the process of embryonation and development of larvae into adult mosquitoes.

Based on the results of the study, it was found that 48 respondents (64.9%) with non-risk air temperatures did not find *Aedes sp larvae.* while in 21 respondents (30.4%) with risky air temperatures, *Aedes sp larvae were found.* The results of the study showed that air temperature with *Aedes sp larvae* in Simpang III Sipin sub-district in 2024 had a relationship with a p-value = 0.675 (p>0.05).

This study is in line with a study conducted by Ashari Rasjid, et al., in Majauleng District, Wajo Regency, stating that air temperature and the presence of *Aedes larvae* have no relationship with a p- *value of* 0.226 (Rasjid et al., 2023) . In line with the research of Miftahul Jannah, et al. (2021) which was conducted in Balleanging Village, Ballocci District, Pangkep Regency, it was stated that air temperature and the presence of *Aedes sp larvae* were not related with a p- *value of* 0.901 (Jannah et al., 2021) . And this study is not in line with the research of

Lenny Mulyani (2022) in Kartasari Village which revealed that air temperature and the presence of *Aedes sp larvae* had a relationship with a p-value of 0.017 (Mulyani et al., 2022) .

Based on the results of field observations, it was found that the air temperature in the bathroom was mostly found to be in the non-risk category. Several factors can influence this, including the time of measurement which was carried out when the weather was not too hot. When the study was conducted, environmental conditions had not reached the daily peak temperature, so that the temperature in the bathroom remained within the range that was in accordance with the established standards. In addition, another factor that contributed to the temperature conditions that were risky for the presence of larvae was the lack of ventilation in the bathroom. Limited ventilation causes air exchange in the bathroom to be suboptimal, so that the temperature remains constant and does not experience significant changes due to exposure to sunlight. Lack of ventilation also has an impact on higher humidity levels, which can support mosquito breeding if not accompanied by good hygiene management. With these conditions, it is recommended that people increase air circulation in the bathroom by adding ventilation or opening windows when possible. In addition, ensuring bathroom cleanliness and reducing stagnant water remain important steps in preventing the breeding of *Aedes sp mosquitoes.*

CONCLUSION

Aedes sp larvae in Simpang III Sipin Village found 47 houses (32.9%) positive for larvae, and the frequency distribution of good knowledge was 104 (72.7%), respondents with a positive attitude were 76 (53.1%), respondents who drained the landfill were 118 (82.5%), respondents with a large number of landfills were 81 (56.6%), respondents with risky air humidity were 108 (75.5%), and respondents with non-risky temperatures were 51.7%. And there is a relationship between knowledge, attitude, draining landfills, number of landfills, and air humidity with the presence of *Aedes sp larvae,* and there is no relationship between air temperature and the presence of *Aedes sp larvae.*

LIMITATIONS

This research has limitations that affect the research results, namely:

1. In terms of time, this is because researchers spend a long time in one house, while researchers have to visit other houses within a certain time frame to measure humidity and air temperature.

2. Researchers had difficulty meeting respondents because not all respondents were at home at the time of the visit, so rescheduling was necessary and this could slow down the research process.
3. Some families declined to become respondents for various reasons, such as being busy and so on.

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