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# Analysis of Factors Contributing to the Spread of Dengue Hemorrhagic Fever (DHF) Cases at the Pajar Bulan Community Health Center in Seluma District in 2025

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## Abstract

The emergence of Dengue Fever (DBD) can be explained through the epidemiological triangle concept, which includes the agent, host, and environment. The causative agent of DBD is the dengue virus from the Flavivirus genus (Group B Arbovirus), which is part of the Togaviridae family. The host is humans who are susceptible to dengue virus infection. Several factors affecting humans include age, gender, nutrition, population, and mobility. Environmental factors influencing the emergence of dengue disease include physical, biological, and social aspects (Ariati and Athena, 2022). The aim of this study is to identify the factors causing dengue fever incidence at Pajar Bulan Health Center in Seluma Regency in 2025. The research design used in this study is observational analytic with a matched case-control design. Risk factors are studied using a retrospective approach, identifying current effects and then identifying risk factors that occurred in the past by matching certain variables. This research was conducted in the working area of the health center with a sample size of 152 respondents. The results indicate a relationship between housing density, waste disposal habits, mosquito repellent use, and community knowledge with the incidence of DBD at Pajar Bulan Health Center in 2025, with community knowledge being the most influential factor. It is hoped that healthcare workers will be more active in health services, health promotion, and socialization to reduce the incidence of DBD, for example, by providing education on how to address the determinants that can lead to DBD.

## Keywords

DBD, Agent, Host

## Introduction

World Health Organization (WHO) in 2024 reported the number of cases Dengue hemorrhagic fever (DHF) cases have increased significantly worldwide, breaking international records. The rise in the spread of the dengue virus worldwide is said to be related to climate change. The World Health Organization ( WHO ) has declared a dengue fever emergency since December 2023. Less than six months into 2024, several countries in Central and South America have recorded a record-breaking increase in dengue cases. According to a WHO report, in the first four months of 2024, reported dengue cases have reached 7.9 million. So far, there have been 4,000 deaths worldwide related to dengue fever. Meanwhile, in Indonesia, the Indonesian Ministry of Health recorded 119,709 dengue cases as of the 22nd week of June 2024. This figure has exceeded the dengue infection rate for all of 2023, which was 114,720 cases (Connor, 2022). Dengue Hemorrhagic Fever (DHF) is an infectious disease caused by the dengue virus (DENV). The dengue virus is transmitted to humans through the bite of infected female mosquitoes, primarily the Aedes aegypti and Aedes albopictus species (WHO, 2022). The incubation period is The time for the dengue virus in the human body until symptoms appear ranges from 3 – 10 days after a mosquito bite, with an average incubation period of 5 – 7 days (Connor, 2022). In 2024, Dengue Hemorrhagic Fever (DHF) cases continued to be a global concern. According to World Health Organization (WHO) data, as of May 2024, there were more than 7.5 million cases of DHF and more than 3,000 deaths related to DHF reported from 73 countries or territories (ECDC, 2024). Globally, the most affected region was the Americas, with Brazil reporting more than 6 million cases. In Africa, WHO recorded more than 5 million cases of DHF since the beginning of 2023, with 5,000 deaths spread across more than 80 countries (WHO, 2024).

The Indonesian Ministry of Health also reported a significant increase in DHF cases. As of early 2024, Indonesia recorded an increase in DHF cases, particularly in areas with high rainfall that facilitate the breeding of the Aedes aegypti mosquito. As of March 1, 2024, Indonesia recorded nearly 16,000 cases of dengue fever (DHF) in 213 districts/cities, with 124 deaths. This situation is expected to persist until April due to the rainy season following the El Niño phenomenon (Ministry of Health, 2024). Dengue Hemorrhagic Fever (DHF) is an infectious disease caused by the dengue virus, transmitted through the bite of the Aedes aegypti and Aedes albopictus mosquitoes. This disease is characterized by high fever, joint and muscle pain, headache, pain behind the eyes, skin rash, and minor bleeding such as nosebleeds or bleeding gums. If not treated properly, DHF can progress to more severe forms such as dengue hemorrhagic fever (DHF) or dengue shock syndrome (DSS), which can be fatal. This viral infection results in high mortality and morbidity rates worldwide (Anas, 2023). Dengue Hemorrhagic Fever is a disease caused by the Dengue virus , which is transmitted through the bite of the Aedes aegypti mosquito . DHF is an acute febrile illness that primarily affects children under 15 years of age, but can also affect adults, accompanied by hemorrhagic manifestations, causing shock that can lead to death (Zulkoni, 2021). Breeding sites for the Aedes Aegypti mosquito can be clean water reservoirs such as bathtubs, used tires, used cans, and others. The incidence of dengue has increased dramatically, especially in tropical areas (Sembel, 2019). DHF is one of the diseases that remains a problem for the community, especially in lowland areas with dense settlements because the mosquito vector is still high (Sulasmi, 2023). Dengue Hemorrhagic Fever (DHF) is a complication of worsening dengue fever. Dengue Hemorrhagic Fever (DHF) is a type of acute febrile illness caused by one of four serotypes of the Flavivirus genus known as the

Dengue Virus, characterized by 2 to 7 days of unexplained hemorrhagic fever, weakness, restlessness, heartburn, and signs of bleeding on the skin in the form of hemorrhagic spots. Dengue fever, also known as Dengue Hemorrhagic Fever (DHF), is an infectious disease caused by the Dengue virus infection, which has 4 serotypes, namely Den-1, Den-2, Den-3, Den-4 (Ariani, 2022). Until now, DHF remains a public health problem and has social and economic impacts. Social losses that occur include panic in families, death of family members, reduced life expectancy in families, and reduced life expectancy in the community (Ministry of Health of the Republic of Indonesia, 2022). Dengue fever is one of the most common health problems in the community, causing various health problems.

This disease is caused by the bite of the Aedes aegypti mosquito, which transmits the dengue virus. This incident can occur annually and can affect all age groups. This occurs due to a lack of public participation in eradicating mosquito breeding sites. The high number of dengue fever cases in the community is due to suboptimal dengue fever prevention measures related to the National Population and Child Protection Agency (PSN). Therefore, health education related to PSN is necessary to socialize the community to reduce the incidence of dengue fever (Ministry of Health of the Republic of Indonesia, 2022). The problem of infectious diseases is still a health problem in Indonesia, infectious diseases are diseases caused by microorganisms, whether bacteria, viruses, or fungi, which can be transmitted from one sufferer to a healthy person, causing illness as a source of infection, one of the diseases is Dengue Hemorrhagic Fever (DHF), (Ministry of Health of the Republic of Indonesia, 2022). The emergence of dengue fever can be explained through the concept of the epidemiological triangle, namely the presence of an agent, a host, and the environment. The causative agent of dengue fever is the dengue virus from the genus Flavivirus (Arbovirus Group B), one of the genera of the family Togaviridae. The host is a human who is susceptible to dengue virus infection. Several factors that influence humans are: age, gender, nutrition, population, and mobility. The environment that influences the emergence of dengue fever is physical, biological, and social (Ariati and Athena, 2022). The environment is everything outside the host, including inanimate and living objects, both tangible and abstract, such as the atmosphere formed by the interaction of all elements, including other hosts. Environmental factors play a crucial role in transmission, particularly a physical home environment that is inadequate or far from adequate (Tegar, 2021). Environmental factors influencing dengue fever incidence include the physical home environment, including ventilation, humidity, and temperature, which significantly influence a person's susceptibility to dengue fever. This is related to a person's habits in adapting to their environment. The biological environment is related to the vector or reservoir of the disease. Meanwhile, other environmental factors can be influenced by the socioeconomic environment. Social and economic factors are interrelated and influence each other (Suyasa, 2021). The interaction between causative factors, the host, and the environment is a mutually influencing condition in causing a disease. According to John Gordon's theory, a disease can arise due to an imbalance between the cause of the disease and the host. This imbalance depends on the natural properties and characteristics of the causative factors and the host, both individually and collectively.

## Methods

### Univariate analysis

To obtain an overview of the frequency distribution and proportion of the variables studied, both independent and dependent variables, using the formula according to Hidayat (2019), namely:

$$P = \frac{F}{N} X\ 100$$

Information :

P = Percentage to be achieved

F = Answers in each category

N = Number of research samples

The results of the above calculations:

0% = None of the respondents

1%-25% = A small portion of respondents

26%-49% = Almost half of the respondents

50% = Half of the respondents

51%-75% = Most of the respondents

76%-99% = Almost all respondents

100% = All respondents .

### Bivariate Analysis

This analysis was used to determine the relationship between independent variables (residential density, mosquito repellent use, landfill cleaning habits, and public knowledge) and the dependent variable (dengue fever) using the *Chi-square test*. The calculation results are interpreted as follows:

1. The p-value ≤ of a (0.05) then Ho is rejected meaning the test results are significant so that it states there is a relationship between the independent variable and the dependent variable. There is a relationship between factors ( residential density, use of mosquito repellent, habit of draining landfills, puddles ) on the prevention of dengue fever incidents in the working area of the Pajar Bulan Health Center, Seluma Regency, Bengkulu Province in 2025 .
2. The p value>a (0.05) means that Ho is accepted, meaning that the test results are not significant, thus stating that there is no relationship between the factors ( residential density, use of mosquito repellent, habit of draining landfills, standing water ). on the prevention of dengue fever incidents in the Seluma Regency Working Area, Bengkulu Province in 2025. Residential density, use of mosquito repellent, habits of draining landfills, standing water and public knowledge ) on the prevention of dengue fever incidents in the working area of the Pajar Bulan Health Center, Seluma Regency, Bengkulu Province in 2025. Multivariate analysis

### Multivariate analysis

Conducted to determine the relationship of more than one independent variable with one dependent variable. So that it can be known simultaneously the relationship between residential

density, use of mosquito repellent, habits of draining landfills, and public knowledge ) towards the prevention of dengue fever incidents in the Pajar Bulan Community Health Center Working Area, Seluma Regency, Bengkulu Province in 2025. In this study, multivariate tests were carried out using linear *logistic regression tests* because the dependent variable in this case is in the form of a dummy variable (between 0 (zero) and 1 (one). In logistic regression analysis does not require a classical assumption test because in the logistic regression analysis a fit model analysis is produced which describes whether the data from this study is good for use in research (Ghozali, 2019). *logistic regression test* used is a logistic regression test with predictive modeling. Predictive modeling aims to obtain a model consisting of several independent variables that are considered best for predicting dependent events. Multivariate analysis begins by conducting a bivariate analysis of each independent variable with the dependent variable. If the results of the bivariate analysis show a *p-value* ( *sig* .) ≤0.25, then the research variable can be included in the multivariate analysis modeling. Conversely, if the results of the bivariate analysis show a *p-value* ( *sig*. ) >0.25, then the variable cannot be included in the multivariate modeling.

## Results and Discussions

### Univariate Analysis

Distribution of Dengue Fever Occupancy Density Frequency at Pajar Bulan Community Health Center, Seluma Regency, Bengkulu City in 2025

**Table 1.** Distribution Frequency Dengue Fever Occupancy Density at the Pajar Bulan Community Health Center, Seluma Regency, Bengkulu City in 2025

| Residential Density | Frequency | Presentation |
|---|---|---|
| Not eligible | 94 | 61.8 |
| Qualify | 58 | 38.2 |
| **Total** | **152** | **100** |

### Distribution of Frequency of Mosquito Repellent Use at Pajar Bulan Community Health Center, Seluma Regency, Bengkulu City in 2025

**Table 2.** Distribution Frequency Use of Mosquito Repellent Dengue Hemorrhagic Fever at the Pajar Bulan Community Health Center, Seluma Regency, Bengkulu City in 2025

| Use of Mosquito Repellent | Frequency | Presentation |
|---|---|---|
| Do not use | 100 | 65.8 |
| Use | 52 | 34.2 |
| **Total** | **152** | **100** |

### Bivariate Analysis

### The Relationship Between Residential Density and Dengue Fever Incidence at the Pajar Bulan Community Health Center, Seluma Regency, Bengkulu in 2025

**Table 3.** Relationship between Residential Density and Dengue Fever Incidence at Pajar Bulan Community Health Center, Seluma Regency, Bengkulu in 2025

| Residential Density | Dengue Fever Incident | | | P-Value | OR | 95% CI |
|---|---|---|---|---|---|---|
| | Case | Control | Total | | | |
| Not eligible | 0 4 4 6 4 00 | | | 0 ,000 | 4 ,632 | 2 . 270 - |

| Residential Density | Dengue Fever Incident | | | | | | P-Value | OR | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| | Case | | Control | | Total | | | | |
| Qualify | 6 | 8 | 2 | 3 | 8 | 00 | | | 9.452 |
| **Total** | | **76** | | **76** | | **152** | | | |

Based on table 5.6 It is known that from 76 people with DHF and 76 people without DHF, 60 (64%) people with DHF cases did not meet the requirements and 16 (28%) people met the requirements, it was also found that 34 people without DHF did not meet the requirements and 42 people met the requirements for residential density. The results of the bivariate analysis using the Chi-square statistical test ( *Continuity Correction* ) obtained a p-value = 0.000 <α 0.05, meaning that there is a relationship between residential density and the incidence of DHF at the Pajar Bulan Health Center, Seluma Regency, Bengkulu City in 2025. The results of the bivariate analysis showed an OR value of 4.632, which means that DHF patients with residential density have a 4.632 times chance of getting DHF.

**The Relationship Between the Use of Anti-Mosquito Drugs and the Incidence of Dengue Fever at the Pajar Bulan Community Health Center, Seluma Regency, Bengkulu in 2025**

**Table 4.** The Relationship between Mosquito Repellent Use and Dengue Fever Incidence at the Pajar Bulan Community Health Center, Seluma Regency, Bengkulu in 2025

| **Use of Mosquito Repellent** | **Dengue Fever Incident** | | | | | | **P-Value** | **OR** | **95% CI** |
|---|---|---|---|---|---|---|---|---|---|
| | **Case** | | **Control** | | **Total** | | | | |
| | | **%** | | **%** | | | | | |
| Do not use | 4 | 64 | 6 | 3 6 | 00 | 00 | | | |
| Use | 2 | 23 | 0 | 7 3 | 2 | 00 | 0 ,000 | 5 , 927 | 2 , 762 - 12 . 715 |
| **Total** | | **76** | | **76** | | **15 2** | | | |

Based on table 5.7 It is known that 76 people had DHF and 76 people did not have DHF. 64 (64%) people with DHF cases did not use mosquito repellent and 12 (23%) people used mosquito repellent, it was also found that 36 (64%) people without DHF did not use mosquito repellent and 40 (77%) people used mosquito repellent. The results of the bivariate analysis using the Chi-square ( *Continuity Correction* ) statistical test obtained a p-value = 0.000 <α 0.05, which means that there is a relationship between the use of mosquito repellent and the incidence of dengue fever at the Pajar Bulan Health Center, Seluma Regency, Bengkulu City in 2025. The results of the bivariate analysis showed an OR value of 5.927, which means that dengue fever patients who use mosquito repellent have a 5.927 times chance of getting dengue fever.

**The Relationship between the Habit of Draining Landfills and the Incidence of Dengue Fever at the Pajar Bulan Community Health Center, Seluma Regency, Bengkulu in 2025.**

**Table 5.** The Relationship between the Habit of Draining Landfills and the Incidence of Dengue Fever at the Pajar Bulan Community Health Center, Seluma Regency, Bengkulu in 2025

| Draining the landfill | Dengue Fever Incident | | | | | | P-Value | OR | 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| | Case | | Control | | Total | | | | |
| No Draining | 0 | 7 | 0 | 3 | 0 | 00 | 0.001 | 5,750 | 2,804 - 11,791 |
| Drain | 6 | 6 | 6 | 4 | 2 | 00 | | | |
| **Total** | | **76** | | **76** | | **152** | | | |

**Based on table 5.8 It is known that from 76 people with DHF and 76 people without DHF, 60 (67%) people with DHF cases did not empty the TPA and 16 (26%) people empty the TPA, it was also found that 30 (33%) people without DHF did not empty the TPA and 46 (74%) people did empty the TPA. Multivariate Analysis**

The multivariate analysis used in this study is logistic regression analysis with the *Enter method*, which aims to look at independent variables (age, gender, use of mosquito repellent, landfill emptying habits and public knowledge). Variables Which will used in analysis regression logistics is a variable Which moment analysis bivariate get *p-value* <0.25 Following candidate variables in multivariate analysis

**Table 6.** Variables Candidate Analysis Multivariate

| Variables | P-Value | Information |
|---|---|---|
| Residential Density | 0,000 | Candidate |
| Use of Mosquito Repellent | 0,000 | Candidate |
| The Habit of Draining Landfills | 0,000 | Candidate |
| Public Knowledge | 0,000 | Candidate |

## Discussion

**Connection Residential Density with Dengue Fever Incidents at Pajar Bulan Community Health Center, Seluma Regency, Bengkulu in 2025**

Based on the analysis results, it is known that 94 respondents who have residential density that does not meet the requirements with DHF incidents are 60 (64%) respondents and 34 (36%) other respondents who do not have DHF and 58 respondents who meet the requirements for residential density are 16 (28%%) respondents with DHF incidents and 24 (73%%) other respondents who do not have DHF. The results of the bivariate analysis using the Chi-square (Continuity Correction) statistical test obtained a *p-value* = 0.000 <$\alpha$ 0.05, meaning that there is a relationship between residential density and DHF incidents at the Pajar Bulan Health Center,

Seluma Regency, Bengkulu City in 2025. The results of the bivariate analysis showed an OR value of 4.632, which means that DHF patients with residential density have a 4.632 times chance of getting DHF.

Housing density can affect the incidence of Dengue Hemorrhagic Fever (DHF) because the denser the housing, the higher the risk of dengue virus transmission through Aedes aegypti or Aedes albopictus mosquitoes. However, several studies show varying results regarding the relationship between housing density and DHF incidence. Influencing Factors: Population density: Increases the risk of dengue virus transmission because more people can be infected, as well as environmental conditions: High housing density can increase the risk of disease transmission if not balanced with clean and healthy environmental conditions (Suyasa, 2021)

The increase and spread of dengue fever (DHF) cases is likely caused by several factors, including environmental conditions and public attitudes. Sofia (2014) also stated that DHF cases are likely caused by high population mobility, urban development, climate change, changes in population density and distribution, and other epidemiological factors. This condition is exacerbated by a lack of public understanding of DHF and low community participation. One factor that can influence the transmission of dengue fever is the physical environment. The vector that causes dengue fever is closely related to climate change. Climate change can influence the increased risk of transmission. Increased air temperature and rainfall intensity will impact animal ecosystems, such as accelerating the metamorphosis cycle. Climate change can also cause several viruses, which are predicted to increase during the changing seasons, due to high rainfall, air temperature, and humidity. Furthermore, temperature will also affect pathogenic organisms such as protozoa, bacteria, and viruses, thereby increasing the potential for disease transmission (Ariati and Athena, 2022).

Densely populated environments can also accelerate the spread of disease due to high population mobility, making it easier for mosquitoes to transmit the dengue virus from one person to another.

This study is in line with Tamengkel (2020), who stated that the majority of dengue fever sufferers are respondents with densely populated homes. Residential density can affect the number of dengue fever cases. A large number of individuals in a place will facilitate the spread of dengue fever, because it will facilitate and accelerate the transmission of the dengue virus from the vector. The denser the population, the more dense the housing. Occupancy density is the ratio of the number of occupants to the area of the house where according to health standards is 10 m per occupant, the larger the floor area of the house, the higher the suitability of a house for habitation .

Another study conducted by Sofia in 2014 showed no correlation between residential density in the house and the incidence of dengue fever with a p-value of 0.202 and OR of 1.9 (95% CI of 0.8-4.5). This study also aligns with Hermansyah's research, which found no correlation between residential density and the incidence of dengue fever. This is because population density is not a causative factor for dengue fever, but can be a risk factor when combined with other risk factors such as population mobility, environmental sanitation, the presence of containers as breeding grounds for Aedes mosquitoes, vector density, level of knowledge, attitudes, and actions towards dengue fever, which in general can cause dengue fever.

**Connection Use of Mosquito Repellent with Dengue Fever Incidents at Pajar Bulan Community Health Center, Seluma Regency, Bengkulu in 2025**

Based on the results of the analysis it is known that 100 respondents who do not use mosquito repellent with the number of DHF incidents as many as 64 (64%) respondents And 36 (36%) other respondents who did not have DHF and 52 respondents who used mosquito repellent as many as 12 (23%%) respondents with DHF incidents and 40 (77%%) other respondents who did not have DHF. The results of the bivariate analysis using the Chi-square (Continuity Correction) statistical test obtained a p-value = 0.000 <α 0.05, meaning that there was a relationship between the use of mosquito repellent and the incidence of DHF at the Pajar Bulan Health Center, Seluma Regency, Bengkulu City in 2025. The results of the bivariate analysis showed an OR value of 5.927, which means that DHF patients who use mosquito repellent have a 5.927 times chance of getting DHF.

The use of mosquito repellent, particularly insecticides, is associated with the incidence of Dengue Hemorrhagic Fever (DHF). Several studies have shown that not using insecticides increases the risk of DHF, while using mosquito repellent has a greater effect on controlling DHF than other methods such as larvicides or fogging.

**Connection Landfill Draining Incident with Dengue Fever Incidents at Pajar Bulan Community Health Center, Seluma Regency, Bengkulu in 2025**

Based on the analysis results, it is known that 90 respondents who did not empty the landfill with DHF incidents were 60 (67%) respondents and 30 (33%) other respondents who did not have DHF and 62 respondents who empty the landfill were 16 (26%%) respondents with DHF incidents and 46 (74%%) other respondents who did not have DHF. The results of the bivariate analysis using the Chi-square (Continuity Correction) statistical test obtained a p-value = 0.000 <α 0.05, meaning that there is a relationship between the habit of emptying the landfill and the incidence of DHF at the Pajar Bulan Health Center, Seluma Regency, Bengkulu City in 2025. The results of the bivariate analysis showed an OR value of 5.750, which means that DHF patients who empty the landfill have a 5.750 times chance of getting DHF.

Regularly emptying water reservoirs (TPA) can help prevent dengue fever (DHF) because the Aedes aegypti mosquito, which carries the dengue virus, breeds in stagnant water. If TPA is not drained, these mosquitoes will have a place to lay eggs and breed, thereby increasing the risk of dengue transmission. Stagnant water in TPA becomes an ideal place for Aedes aegypti mosquitoes to lay eggs and breed. By regularly emptying TPA, especially once a week, we can reduce mosquito breeding grounds and reduce the risk of dengue transmission.

Regularly emptying landfills is an important step in preventing dengue fever, as it can help reduce mosquito populations and break the chain of disease transmission. Several studies conducted by Shinta (2022) show a significant relationship between the frequency of landfill emptying and the incidence of dengue fever. Research in Bengkulu City showed that respondents who did not empty landfills had a 4.474 times greater risk of suffering from dengue fever compared to those who regularly empty their landfills. Other studies also showed that respondents who empty their landfills less than once a week had a 3.672 times greater risk of

contracting dengue fever compared to those who regularly empty their landfills.

Based on research conducted by Purwaningsih (2017), respondents who implemented a landfill drainage frequency of > 1 week had a 21-fold risk of developing dengue fever compared to respondents with a landfill drainage behavior of ≤ 1 week. Routine landfill drainage behavior needs to be implemented accompanied by brushing the landfill walls to clean mosquito eggs and larvae that live and stick to the walls of the landfill. Good landfill drainage practices will affect the presence of mosquito larvae (Yusuf Sukman, 2017).

**Connection Public Knowledge with Dengue Fever Incidents at the Seluma Regency Health Office, Bengkulu in 2025**

Based on the analysis results, it is known that 86 respondents who have insufficient knowledge of DHF incidents are 58 (67%) respondents and 28 (33%) other respondents who do not have DHF and 66 respondents who have sufficient knowledge are 18 (28%) respondents with DHF incidents and 48 (73%) other respondents who do not have DHF. The results of the bivariate analysis using the Chi-square (Continuity Correction) statistical test obtained a p-value = 0.000 <α 0.05, meaning that there is a relationship between community knowledge and DHF incidents at the Pajar Bulan Health Center, Seluma Regency, Bengkulu City in 2025. The results of the bivariate analysis showed an OR value of 5.524, which means that DHF patients who have sufficient knowledge have a 5.524 times chance of getting DHF.

Public knowledge about dengue fever (DHF) is crucial for preventing dengue fever. The better the public's knowledge, the better the dengue prevention measures. Good knowledge about dengue fever can increase public awareness of preventive measures, such as environmental cleaning, disposal of stagnant water, and the use of insecticides. Knowledge of dengue fever, including its causes, symptoms, and transmission, provides the basis for public action. With good knowledge, the public can take effective preventive measures, such as cleaning the environment of places that can become mosquito breeding grounds, disposal of stagnant water, and use of insecticides according to instructions. Good knowledge also increases public awareness of carrying out preventive measures routinely and continuously, thereby reducing the risk of dengue fever.

research shows that people who have experienced dengue fever have better knowledge about the disease than those who have not. This suggests that the experience of dengue fever can increase public knowledge and awareness to prevent recurrence.

Minimal knowledge can affect individual behavior in maintaining their health, which can increase the risk of spreading diseases, especially dengue fever which has a higher risk. 28. Efforts to maintain personal hygiene, children, the environment, and increase knowledge about dengue fever prevention are very important. One of them is through the 3M Plus practice recommended by the government, including tightly closing water storage areas, draining a number of water sources, and recycling waste that can become breeding grounds for the Aedes aegypti mosquito. In addition, actions such as fogging, providing abate, using anti-mosquito drugs, planting mosquito-repellent plants, and raising fish that eat larvae can also be done.

The findings of this study are consistent with several previous studies that demonstrated a correlation between knowledge and a history of dengue fever cases, with a significant p-value.

Based on direct observation, the researchers' assumption is that the lack of public awareness of the dangers of dengue fever significantly impacts attitudes and preventive measures, as public knowledge and awareness are crucial factors in preventing dengue fever. The greater the public's knowledge and actions in preventing dengue fever, the lower the number of cases.

Knowledge is a key factor shaping individual health behaviors, acquired through various means, both formal and informal. Knowledge is influenced by a number of factors, including values, beliefs, attitudes, and age. As individuals age, their knowledge tends to expand along with diverse life experiences. 11 Both knowledge and attitudes play a crucial role in shaping family behavior related to dengue fever prevention, as research findings demonstrate a correlation between community knowledge and dengue fever prevention practices, as well as between community attitudes and dengue fever prevention practices.

On the other hand, continuous socialization targeting the community is also important. If information from related institutions is spread evenly throughout all levels of society, knowledge about how to eradicate mosquito nests is likely to increase. The higher the community's participation in eliminating mosquito nests, the lower the number of dengue fever cases that occur in their area. According to the Ministry of Health in 2016, PSN is a prevention strategy to stop the spread of dengue fever and the Zika virus by breaking the chain of transmission through preventing bites from Aedes aegypti and Aedes albopictus mosquitoes. A number of preventive measures involve monitoring mosquito larvae and implementing PSN 3M Plus regularly in every home to eradicate mosquito nests, including: (a) draining a number of potential places that usually become water reservoirs, including bathtubs, dispensers, buckets, and the like; (b) tightly closing water reservoirs, including drums, jugs, and the like; and (c) Recycling a number of used items that can hold water, including plastic bottles, used tires, to avoid the potential for mosquito breeding.

Another study by Sari et al. (2022) on the relationship between community knowledge levels and dengue fever incidence in Munggur Hamlet, Ngawi District, Ngawi Regency, obtained a p-value of 0.018. The results of this study are also in line with Satria et al. (2021) on the relationship level of knowledge with dengue fever prevention behavior in the Perumnas Regional Health Center, Curup Regency, Rejang Lebong Regency, where the p value = 0.001

## Conclusion

1. Most of the DHF incidents occurred in densely populated areas at the Pajar Bulan Health Center, namely 94 people (61.8%).
2. Most of the DHF incidents occurred in those who did not use mosquito repellent at the Pajar Bulan Health Center, namely 100 people (65.8%).
3. Most of the DHF incidents occurred in those who did not empty the TPA at the Pajar Bulan Health Center, namely 90 people (59.2%).
4. Most of the DHF incidents occurred in people with less knowledge at the Pajar Bulan Health Center, namely 86 people (56.6%).
5. There is a relationship between residential density and the incidence of dengue fever at the Pajar Bulan Community Health Center in 2025.
6. There is a relationship between the use of mosquito repellent and the incidence of dengue

fever at the Pajar Bulan Community Health Center in 2025.

7. There is a relationship between the habit of draining landfills and the incidence of dengue fever at the Pajar Bulan Health Center in 2025.
8. There is a relationship between public knowledge and the incidence of dengue fever at the Pajar Bulan Health Center in 2020.
9. Of the four factors affecting dengue fever incidence, residential density has the greatest influence. in Pajar Bulan Community Health Center, Seluma Regency, Bengkulu City, 2025

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