

## KNOWLEDGE, COMMUNITY BEHAVIOR, AND ENVIRONMENTAL FACTORS IN RELATION TO THE INCIDENCE OF DENGUE HEMORRHAGIC FEVER

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### ABSTRAK PENGETAHUAN, PERILAKU MASYARAKAT DAN FAKTOR LINGKUNGAN DENGAN KEJADIAN DEMAM BERDARAH DENGUE

Latar Belakang : Demam Berdarah Dengue (DBD) merupakan salah satu penyakit tular vektor yang terkenal di Indonesia dengan tingkat endemisitas yang tinggi. Strategi dengan metode berbasis pemberdayaan serta melibatkan masyarakat secara berkelanjutan, merupakan cara efektif untuk mengendalikan DBD. Pemahaman masyarakat tentang kejadian DBD, perilaku cara menanganinya dan pencegahan kontak dengan vektor DBD serta faktor lingkungan antara lain perilaku menggantung pakaian, ketersediaan tutup pada kontainer, serta ketersediaan kawat kassa memberikan pengaruh signifikan dalam pengendalian DBD. Hasil pre survey awal di Puskesmas Panongan Kabupaten Tangerang didapatkan informasi masih terbatasnya masyarakat lokal memahami faktor – faktor tersebut.

Tujuan : Mengetahui pengaruh pengetahuan, perilaku (memakai lotion anti nyamuk, memakai kelambu) dan faktor lingkungan ( Menggantung pakaian, ketersediaan kawat kassa, dan Ketersediaan tutup kontainer) terhadap kejadian DBD di wilayah kerja Puskesmas Panongan, Kabupaten Tangerang, Banten.

Metode : Jenis penelitian adalah penelitian kuantitatif obsevasional dengan rancangan penelitian cross sectional. Jumlah sampel penelitian 80 responden penelitian dengan pengambilan sampel menggunakan cluster sampling, yang terdiri dari dua kelompok desa yaitu Desa Mekar Bakti dan Desa Ciakar. Instrumen penelitian menggunakan kuisioner dan lembar observasi.

Hasil penelitian : Karakteristik responden penelitian, dari 80 orang, mayoritas responden berjenis kelamin perempuan sebanyak 54 orang (67,5%), berusia 21- 30 tahun sebanyak 32 orang (40%), memiliki pekerjaan sebagai pegawai swasta 44 orang (55%), dengan lulusan SMA sebanyak 52 orang (62%). Responden yang memiliki pengetahuan baik tentang DBD di wilayah Puskesmas Panongan Kabupaten Tangerang sebanyak 59 orang (73,75%), perilaku baik memakai lotion anti nyamuk sebanyak 41 orang (51.3%), perilaku pemakaian kelambu baik sebanyak 51 orang (63.8%), perilaku baik menggantung pakaian sebanyak 51 orang (65%). Hasil observasi menyatakan 55 orang responden (68.8%) memiliki rumah dalam kondisi baik dengan tersedianya kawat kassa dan 67 orang (83.8%) memiliki tutup pada kontainer pada setiap rumahnya.

Kesimpulan : Diketahui distribusi kejadian DBD di wilayah Puskesmas Panongan sebanyak 65 kasus (81,25%). Perilaku menggantung pakaian berhubungan dengan kejadian DBD di wilayah Puskesmas Panongan Tangerang dengan nilai p value = 0,035 dan nilai OR sebesar 3,632, sedangkan pengetahuan, perilaku memakai lotion anti nyamuk, perilaku memakai kelambu, serta faktor lingkungan ketersediaan kawat kassa dan tutup kontainer pada rumah warga, tidak memiliki hubungan yang bermakna dengan kejadian DBD.

Saran : Penyuluhan dan upaya promotif dari instansi kesehatan pemerintah lebih ditingkatkan dan diperjelas dalam metode penyampaian serta meninjau kembali upaya penanggulangan dan pemberantasan DBD pada peningkatan peran masyarakat melalui kegiatan pemberdayaan. Bagi masyarakat, Gerakan PSN lebih ditingkatkan lagi dengan kerja bakti membersihkan lingkungan sekitar guna memutus rantai penularan DBD.

Kata kunci : Demam Berdarah Dengue, Pengetahuan, Faktor Lingkungan, Perilaku Masyarakat

### ABSTRACT

Background: Dengue Hemorrhagic Fever (DHF) stands out as a prominent vector-borne disease in Indonesia, characterized by a high level of endemicity. A strategy grounded in empowerment and continuous community involvement proves to be an effective approach for the control of dengue fever. Public comprehension of the prevalence of dengue fever, the adoption of appropriate behaviors to manage it, and the prevention of contact with dengue vectors, as well as environmental factors such as hanging clothes, the availability of lids on containers,

and the availability of wire mesh wield a substantial impact on the control measures for dengue fever. The findings of pre-survey conducted at Puskesmas Panongan in Tangerang, limited understanding of these factors among local communities.

**Purpose:** The purpose of research to ascertain the impact of knowledge, behavior, and environmental factors on the incidence of dengue fever within the working area of Puskesmas Panongan in Tangerang, Banten.

**Methods:** The research conducted adopted a quantitative observational with the research design was cross-sectional. The total research sample was 80 respondents with the sampling technique used was cluster sampling which included two groups of villages, namely Mekar Bakti Village and Ciakar Village. The research instrument used a questionnaire and observation sheet.

**Results:** Characteristics of research respondents, it is evident that out of the total sample of 80 respondents within the working area of Puskesmas Panongan in Tangerang, Banten, 54 respondents or 67.5% are females, and 32 respondents fall within the age range of 21-30 years (40%). Among those, 44 respondents (55%) are employed as private employees, and 52 respondents (62%) have high school degrees. Notably, 59 respondents (73.75%) demonstrated good knowledge about dengue fever, 41 respondents (51.3%) demonstrated good behavior in using anti-mosquito lotion, 51 respondents (63.8%) demonstrated good behavior in using mosquito nets, and 51 respondents (65%) demonstrated good behavior in hanging clothes. The observational findings further revealed that 55 respondents (68.8%) resided in houses with wire mesh, indicating good living conditions, and 67 respondents (83.8%) had lids on containers within their houses.

**Conclusion:** Based on the study results, it is evident that the distribution of dengue fever cases in the working area of Puskesmas Panongan is 65 cases (81.25%). The behavior in hanging clothes is found to be related to the incidence of dengue fever within the working area of Puskesmas Panongan in Tangerang, Banten with a p value = 0.035 and an OR value of 3.632. However, knowledge, the behavior of using anti-mosquito lotion, the behavior of using mosquito nets, as well as environmental factors such as the availability of wire mesh and container lids in residents' houses, did not exhibit a significant relationship with the incidence of dengue fever.

**Suggestion :** Counseling and promotional efforts from government health agencies should be improved in delivery methods. Further clarity is needed in reviewing efforts to control and eradicate dengue fever, emphasizing the importance of increasing the community's role through empowerment activities. For the community, the PSN Movement is strengthened by engaging in community service to clean the surrounding environment, aiming to break the chain of dengue transmissio

**Keywords:** Dengue Hemorrhagic Fever, Knowledge, Environmental Factors, Community Behavior.

## INTRODUCTION

Indonesia, being a tropical country, serves as an endemic region for various infectious diseases. Based on the process of occurrence, infectious diseases can be categorized into endemic infectious diseases and those with the potential to escalate into outbreaks, constituting extraordinary events. Dengue Hemorrhagic Fever (DHF) stands out as a prominent vector-borne disease in Indonesia, characterized by a high level of endemicity. DHF is attributed to the dengue virus, a member of the Arthropod-Borne Virus within the Flavivirus genus and Flaviviridae family. Transmission occurs through the *Aedes* genus mosquito vector, notably *Ae. aegypti*, with the disease manifesting throughout the year and affecting individuals across all age groups. The onset and prevalence of DHF are intricately linked to environmental conditions and community behavior (Utama et al., 2019; Tuiskunen Bäck and Lundkvist, 2013; Kemenkes, 2020).

The Ministry of Health of the Republic of Indonesia (Kemenkes RI), in collaboration with the

World Health Organization (WHO) Country Office Indonesia, introduced the National Strategic Program for the Dengue Fever Control Program (2021-2025). Two primary indicators within the NSP pertain to the burden of dengue infection: the percentage of regencies/municipalities with an incidence rate among the population and a case fatality rate. The national target by 2025 is for 90% of regencies/municipalities to achieve an incidence rate below 49/100,000 and a case fatality rate of 0.5%. To realize this ambitious target, six strategies have been outlined: enhancing effective, safe, and sustainable vector management; improving access to and the quality of dengue case management; reinforcing comprehensive dengue surveillance and responsive outbreak management; enhancing ongoing community involvement; fortifying government commitment, policy, program management, and partnerships; and augmenting assessment, invention, innovation, and research as the foundation for evidence-based policy and program management (WHO, 2021). Vector control and the promotion of

sustainable community involvement emerge as pivotal and efficacious strategies in the comprehensive control of dengue cases (Putri et al., 2023a)

A strategy grounded in empowerment and continuous community involvement proves to be an effective approach for the control of dengue fever. Public comprehension of the prevalence of dengue fever, the adoption of appropriate behaviors to manage it, and the prevention of contact with dengue vectors wield a substantial impact on the control measures for dengue fever (Putri et al., 2021). The Indonesian government, operating through the Health Service, has actively disseminated information to the public regarding initiatives aimed at vector control for dengue hemorrhagic fever, encouraging independent community efforts at the household level. This initiative is recognized as the Eradicating Mosquito Nests by Covering, Draining, and Recycling Plus (PSN 3M Plus) program (Priesley et al., 2018). Environmental factors also play a crucial role in influencing the incidence of dengue hemorrhagic fever. These factors encompass behaviors such as hanging clothes, the availability of lids on containers, and the availability of wire mesh (Ayun and Pawenang, 2017; Apriliana, et al., 2018; Mahardika, 2021; Latif et al., 2021; Nisa and Siwiendrayanti, 2022; Siyam et al., 2023).

The initial instances of dengue fever in Indonesia were documented in 1968 in Surabaya and Jakarta, involving 48 individuals with a case fatality rate (CFR) of 41.4%. In tandem with the escalating mobility and population density in Indonesia, there has been a consistent rise in both the number of dengue fever cases and their geographical spread. In 2019, the number of dengue fever sufferers was reported to have reached 138,127 cases throughout Indonesia, signifying a significant increase from 2018. In that year there were 919 deaths or a CFR of 0.67% in Indonesia. Banten Province has a fairly high CFR, namely 0.48%, with an Incidence Rate (IR) of 22.55 per 100,000 population (Kemenkes, 2020). Based on Tangerang Regency Sectoral Statistics data (2021), the highest cases were in the Puskesmas Panongan working area, namely 93 cases of dengue fever, after the Puskesmas Kelapa Dua and the Puskesmas Balaraja (Depkominfo Tangerang Regency, 2021).

The findings of pre-survey conducted at Puskesmas Panongan in Tangerang revealed a dearth of health education regarding dengue fever, resulting in a limited understanding of its symptoms

## RESEARCH RESULTS

and management among the local populace. Both hamlet heads and neighborhood leaders rarely initiated collaborative efforts within hamlets or neighborhoods, leading to infrequent environmental clean-up activities. Health workers predominantly engaged in fogging only after individuals had already contracted dengue fever, with limited emphasis on preventive measures. The community exhibited a lack of awareness in averting contact with dengue vectors, displaying a reluctance to employ anti-mosquito measures, and adhering to the habit of drying clothes indoors. Routine drainage of water reservoirs within the community was not consistently practiced, and some individuals cleaned their water reservoirs or containers merely once a month. Based on these findings, it is imperative to conduct further research to ascertain the impact of knowledge, behavior, and environmental factors on the incidence of dengue fever within the working area of Puskesmas Panongan in Tangerang, Banten.

## RESEARCH METHODS

The research conducted adopted a quantitative observational approach, focusing on the quantitative measurement of various characteristics (variables) through direct observations. The research design was cross-sectional, involving simultaneous sampling of independent and dependent variables. The research was conducted in February 2021 within the working area of Puskesmas Panongan in Tangerang, Banten.

Cluster sampling was employed as the sampling technique, encompassing two village groups, namely Mekar Bakti Village and Ciakar Village. The sample size, determined using the Slovin formula, was set at 80 individuals. Sampling involved the distribution of questionnaires, interviews with respondents, and direct observations conducted at the respondents' houses. The questionnaire instrument comprised 35 questions, covering variables such as knowledge, behaviors (including the use of anti-mosquito lotion, mosquito nets, and hanging clothes), and environmental factors (specifically, the availability of wire mesh and container lids). Characteristics of the respondents, including gender, age, education, occupation, and the incidence of dengue fever, were extracted from the respondent's observation sheet and medical records. Ethical approval for this research was obtained from the Research Ethics Commission of Universitas Malahayati, with reference number 1627/EC/KEP-UNMAL/III/2021.

Table 1  
Characteristics of Respondents (n=80)

Characteristics	Categories	Frequency	
		n	%
Gender	Male	26	32.5
	Female	54	67.5
Age	10-20 years	2	2.5
	21-30 years	32	40
	31-40 years	26	32.5
	41-50 years	14	17.5
	> 51 years	6	7.5
Education	Not completed Elementary School	1	1.25
	Elementary School	1	1.25
	Junior High School	11	13.75
	Senior High School	52	65
	University	15	18.75
Occupation	Household assistant	4	5
	Laborer	1	1.25
	Farmer	1	1.25
	Private employees	44	55
	Civil servants	5	6.25
	Not working	25	31.25
Incidence of dengue fever	No	15	18.75
	Yes	65	81.25
Knowledge	Good	59	73.75
	Poor	21	26.25
Use of anti-mosquito lotion	Good	41	51.25
	Poor	39	48.75
Use of mosquito nets	Good	51	63.25
	Poor	29	36.75
Hanging Clothes	Good	52	65
	Poor	28	35
Availability of Wire Mesh	Good	55	68.75
	Poor	25	31.25
Container Lids	Good	67	83.75
	Poor	13	16.25

Based on the data presented in Table 1, it is evident that out of the total sample of 80 respondents within the working area of Puskesmas Panongan in Tangerang, Banten, 54 respondents or 67.5% are females, and 32 respondents fall within the age range of 21-30 years (40%). Among those, 44 respondents (55%) are employed as private employees, and 52 respondents (62%) have high school degrees. Notably, 59 respondents (73.75%) demonstrated good knowledge about dengue fever, while 21 respondents (26.25%) demonstrated poor knowledge.

Examining the frequency distribution based on independent variables, it was observed that 41 respondents (51.3%) demonstrated good behavior in

using anti-mosquito lotion, 51 respondents (63.8%) demonstrated good behavior in using mosquito nets, and 51 respondents (65%) demonstrated good behavior in hanging clothes. The observational findings further revealed that 55 respondents (68.8%) resided in houses with wire mesh, indicating good living conditions, and 67 respondents (83.8%) had lids on containers within their houses. Interestingly, this contrasts with the incidence of dengue fever in within the working area of Puskesmas Panongan in Tangerang, Banten, where 65 respondents (81.25%) had experienced dengue fever, while 15 respondents (18.25%) had never been infected.

**Table 2**  
**Factors Related to the Incidence of Dengue Hemorrhagic Fever (n=80)**

Variable	Incidence of Dengue Hemorrhagic Fever (n/%)		P value	OR (95 % CI)
	Non-DHF (n=15)	Dengue fever (n=65)		
Knowledge about dengue fever				
Good	13/22	46/78	0.331	0.372 (0.077-1.811)
Poor	2/9.9	19/90.1		
Behavior of using anti-mosquito lotion				
Good	10/24.4	31/75.6	0.254	0.456 (0.140-1.482)
Poor	5/12.8	34/87.2		
Behavior of using mosquito nets				
Good	8/15.7	43/84.3	0.383	1.710 (0.549-5.332)
Poor	7/24.1	22/75.9		
Behavior in hanging clothes				
Good	6/11.5	46/87.5	0.035	3.632 (1.135-11.620)
Poor	9/32.1	19/67.8		
Availability of wire mesh				
Good	9/16.4	46/83.6	0.538	1.614 (0.504-5.165)
Poor	6/24	19/76		
Availability of container lids				
Good	13/19.4	54/80.6	1,000	0.755 (0.149-3.831)
Poor	2/15.4	11/84.6		

Table 2 reveals that among the 59 respondents with good knowledge about dengue fever, 46 respondents (78%) had experienced dengue fever, whereas 2 respondents with poor knowledge had never been infected. The statistical test results for the knowledge variable in relation to the incidence of dengue fever yielded a p-value of 0.331 ( $p > 0.05$ ), signifying an absence of a significant relationship between knowledge and the incidence of dengue fever within the working area of Puskesmas Panongan in Tangerang, Banten.

Furthermore, it is noted that out of the 41 respondents who demonstrated good behavior in using anti-mosquito lotion, 31 respondents (75.6%) had experienced dengue fever. Similarly, for the variable of behavior in using mosquito nets, 43 respondents (84.3%) with good behavior, had experienced dengue fever. The statistical test results for these two behavioral variables yielded values above 0.05 ( $p > 0.05$ ), indicating that the behaviors of using anti-mosquito lotion and using mosquito nets are not significantly related to the incidence of dengue fever within the working area of Puskesmas Panongan in Tangerang, Banten.

The variable of behavior in hanging clothes, as shown in Table 2, indicates that out of the 52 respondents who demonstrated good behavior in hanging clothes, 46 respondents (87.5%) had experienced dengue fever. However, the statistical

test results for this behavioral variable in relation to the incidence of dengue fever yielded a p-value of 0.035 ( $p < 0.05$ ), indicating a significant relationship between the behavior in hanging clothes and the incidence of dengue fever within the working area of Puskesmas Panongan in Tangerang, Banten. The Odds Ratio was found to be 3.632, suggesting that the behavior in hanging clothes is a risk factor for the incidence of dengue fever. Respondents who demonstrate poor behavior in terms of hanging clothes have a 3.632 times greater risk of experiencing dengue fever compared to those who demonstrate good behavior in terms of hanging clothes.

The last two independent variables, namely environmental factors—availability of wire mesh and availability of container lids in the respondents' houses—reveal that out of the 55 respondents whose houses were equipped with wire mesh, 46 respondents (83.65%) had experienced dengue fever. Similarly, among the 67 respondents whose houses had proper container lids, 54 respondents (80.6%) had experienced dengue fever. The statistical test results for these two environmental variables indicate that there is no significant relationship with the incidence of dengue fever ( $p > 0.05$ ).

## DISCUSSION

### **Knowledge about Dengue Hemorrhagic Fever**

Based on the results of statistical tests, the obtained p-value was 0.331 ( $p > 0.05$ ), signifying that there is no significant relationship between knowledge and the incidence of dengue fever within the working area of Puskesmas Panongan in Tangerang, Banten. These results do not align with a study conducted by Putri et al. (2023b), which reported a relationship between knowledge and the incidence of dengue fever within the working area of Puskesmas Sukarame in Bandar Lampung, with a p-value of 0.037. In that study, respondents with a low level of knowledge had a 2 times higher chance of contracting dengue fever compared to respondents with a high level of knowledge (OR = 2.586). Another study within the working area of Puskesmas Way Kandis in Bandar Lampung conducted by Husna et al. (2020) also indicated that knowledge was a factor related to the incidence of dengue fever (p-value 0.02), with an OR value of 0.40, suggesting that respondents with good knowledge had a risk 2.5 times less likely to suffer from dengue fever compared to respondents with poor knowledge about dengue fever.

As a result of the questionnaire and direct observations conducted by researchers, it was found that good knowledge among the majority of Puskesmas Panongan community did not translate into action in tackling dengue fever. The characteristics of well-informed and highly educated respondents do not consistently determine better awareness of action regarding dengue prevention efforts. Instead, it is more likely that respondents with lower education levels demonstrate higher awareness of action. The study results indicate that high knowledge had no tangible effect on the incidence of dengue fever. These results align with the studies conducted by Retang et al. (2021) and Ardayabi et al. (2022), both of which concluded that public knowledge had no effect on the incidence of dengue fever.

### **Behavior of Using Anti-Mosquito Lotion with the Incident of Dengue Hemorrhagic Fever**

The study results indicate that the behavior of using anti-mosquito lotion is not related to the incidence of dengue fever within the working area of Puskesmas Panongan in Tangerang, Banten, with a p-value of 0.254. These results are consistent with a study conducted by Agustina (2011), which obtained a p-value of 0.708, suggesting no relationship between the habit of using anti-mosquito lotion and the incidence of dengue fever.

However, these results diverge from a study conducted by Ishak et al. (2020) at Puskesmas

Pontap, Palopo, which asserted a relationship between the behavior of using anti-mosquito lotion and the incidence of dengue fever, with a p-value of 0.000 (OR = 7.222). Another study conducted by Ayun and Pawenang (2017) regarding the relationship between environmental and behavioral factors with the incidence of dengue hemorrhagic fever within the working area of Puskesmas Sekaran, Semarang, found that the habit of using anti-mosquito lotion was related to the incidence of dengue fever, with a p-value of 0.041 and OR = 4.200. This indicated that respondents who did not have the habit of using anti-mosquito lotion had a 4.2 times greater risk of experiencing dengue fever compared to those who had the habit of using anti-mosquito lotion.

The timing of using anti-mosquito lotion is related to the biting behavior of *Ae. aegypti*. *Ae. aegypti* is a diurnal mosquito, with the highest peak activity at 09:00 – 10:00 and in the afternoon at 16:00 – 17:00 (WHO, 2019; Kemenkes RI, 2021). Based on direct observations, only a few respondents used anti-mosquito lotion in the morning and evening. Several respondents used lotion when traveling or leaving the house. For respondents categorized as good in using anti-mosquito lotion but still experiencing dengue fever, this may be attributed to the lack of repeated use of anti-mosquito lotion after performing ablution, thereby still attracting female *Ae. aegypti* to bite and feed on blood.

### **Behavior of Using Mosquito Nets with the Incident of Dengue Hemorrhagic Fever**

The variable of behavior in using mosquito nets and its relation to the incidence of dengue fever was examined through statistical tests, yielding a p-value of 0.383. This result indicates that there is no significant relationship between the behavior of using mosquito nets and the incidence of dengue fever within the working area of Puskesmas Panongan in Tangerang, Banten. This finding aligns with a study conducted by Ayun and Pawenang (2017), which concluded that there was no relationship between the habit of using mosquito nets and the incidence of dengue fever within the working area of Puskesmas Sekaran, Semarang.

Based on the observations made by researchers, several families use mosquito nets, while others have nets with holes or damage. Additionally, some families opt not to use mosquito nets due to concerns about the increased air temperature when sleeping with them installed. The use of mosquito nets in the working area of Puskesmas Panongan is perceived as impractical for preventing contact with dengue vectors.

Consequently, people prefer alternative methods such as using mosquito rackets, installing wire mesh, or applying anti-mosquito lotion.

### **Behavior in Hanging Clothes with the Incident of Dengue Hemorrhagic Fever**

The variable of behavior in hanging clothes is the only factor significantly related to the incidence of dengue fever within the working area of Puskesmas Panongan in Tangerang, Banten, with a p-value of 0.035 and an odds ratio (OR) value of 3.632. This signifies that behavior in hanging clothes is a risk factor for the incidence of dengue fever. Respondents who demonstrated poor behavior in terms of hanging clothes have a 3.632 times higher risk of experiencing dengue fever compared to those who demonstrate good behavior in this regard.

The study results align with a study conducted by Ayun and Pawenang (2017), which also reported a significant relationship between the habit of hanging clothes in the room and the incidence of dengue fever (p-value = 0.002). According to their study, respondents with the habit of hanging clothes in the room have a 7.933 times greater risk of experiencing dengue fever than respondents who are not accustomed to hanging clothes in the room (OR = 7.933). This is supported by a study by Putri et al. (2023), which indicates that people's behavior, such as hanging clothes on the bedroom wall or behind the bedroom door, is related to the incidents of dengue fever.

One of the preferred resting places for female *Ae. aegypti* after bloodsucking is hanging clothes, characterized by low light intensity and high humidity. In this environment, female *Ae. aegypti* await the maturation process of their eggs (Ministry of Health of the Republic of Indonesia, 2005). Light intensity and air humidity also influence the breeding of *Ae. aegypti* in terms of flight activity and egg-laying habits (Chade, 2013; Dzul-Manzanila, 2017; Putri et al., 2021).

The researchers' direct observations reveal that some residents hang their clothes behind the bedroom door, while others hang their clothes outside on the walls of their houses. However, many houses lack adequate ventilation, resulting in less sunlight entering the house.

### **Environmental Factor: The Availability of Wire Mesh with the Incident of Dengue Hemorrhagic Fever**

The variable concerning the availability of wire mesh and its relation to the incidence of dengue fever yielded a p-value of 0.538 ( $p > 0.05$ ), indicating that there is no significant relationship between the

availability of wire mesh and the incidence of dengue fever within the working area of Puskesmas Panongan in Tangerang, Banten. The study results are consistent with the results reported by Husna et al. (2020), where the availability of wire mesh is not related to the incidence of dengue fever within the working area of Puskesmas Way Kandis in Bandar Lampung. Another study by Puwaningsih et al. (2017) similarly concluded that the installation of wire mesh is not related to the incidence of dengue fever within the working area of Puskesmas Banjar Negara 1, Banjar Negara.

Upon observation of the conditions in the houses of residents within the working area of Puskesmas Panongan in Tangerang, Banten, it was noted that wire mesh is not installed thoroughly throughout the house. While some houses have wire mesh installed in all door and window ventilation holes, others only have wire mesh installed in ventilation holes in the living room or even no wire mesh at all. Furthermore, not all installed wire mesh is in good condition. To effectively prevent mosquito contact with the occupants of the house, it is crucial to install wire mesh in all door and window ventilation holes inside the house, and the condition of the wire mesh must be regularly maintained.

### **Environmental Factor: The Availability of Container Lids with the Incident of Dengue Hemorrhagic Fever**

The study results indicate that the variable related to the availability of container lids is not related to the incidence of dengue fever (p-value = 1.000). The study results align with the study conducted by Husna et al. (2020) within the working area of Puskesmas Way Kandis in Bandar Lampung, where the availability of container lids is not related to the incidence of dengue fever. However, these results differ from the study by Apriliana et al. (2018) on the incidence of Dengue Hemorrhagic Fever in families, where, in 86 families, the variable related to the availability of container lids had a p-value of 0.040, suggesting a relation between the availability of container lids and the incidence of dengue fever.

Containers play a crucial role in controlling dengue vectors. Female *Ae. aegypti* lay mature eggs in containers filled with clean water inside houses if the containers are not closed (Putri et al., 2018). The life cycle of *Ae. aegypti*, from hatching eggs to becoming adult mosquitoes, takes around 7-10 days, and this cycle is related to the frequency of draining water from the container (CDC, 2020).

The researchers' direct observations and interviews with respondents regarding risk factors, specifically the availability of container lids, it is

evident that many residents are unaware of the types of containers that serve as breeding habitats for *Ae. aegypti*. Additionally, there is a lack of understanding about the recommended frequency of draining containers, which is ideally once a week. Potential breeding sites for larvae are also found in containers that are no longer in use, such as used buckets. Moreover, several puddles of water were observed in the water container behind the refrigerator.

High awareness among the community in dealing with dengue cases is a crucial indicator, as good knowledge not accompanied by practical behavior and actions in preventing dengue fever may be ineffective. Providing information about behaviors and environmental factors related to the incidence of dengue fever is important and must be complemented by the implementation of comprehensive preventive measures.

## CONCLUSION

Based on the study results, it is evident that the distribution of dengue fever cases in the working area of Puskesmas Panongan is 65 cases (81.25%). The behavior in hanging clothes is found to be related to the incidence of dengue fever within the working area of Puskesmas Panongan in Tangerang, Banten. However, knowledge, the behavior of using anti-mosquito lotion, the behavior of using mosquito nets, as well as environmental factors such as the availability of wire mesh and container lids in residents' houses, did not exhibit a significant relationship with the incidence of dengue fever.

## SUGGESTION

Counseling and promotional efforts from government health agencies have been implemented, and there is room for improvement in delivery methods. Further clarity is needed in reviewing efforts to control and eradicate dengue fever, emphasizing the importance of increasing the community's role through empowerment activities. For the community, the PSN Movement is strengthened by engaging in community service to clean the surrounding environment, aiming to break the chain of dengue transmission.

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