IAMSPH 2 (1) (2021) Pages:. 89-97

Journal homepage: https://pcijournal.org/index.php/iamsph

International Archives of Medical Sciences and Public Health

Published: Pena Cendekia Insani

The Conditions Environmental Sanitation, 3M Behavior, and The House Indexwith The Event Of Dengue Dengue Fever (DHF)

Fadhlan Amir Lubis[1], Putra Apriadi Siregar[1], Salamudin [1]

[1]Universitas Islam Negeri Sumatera Utara, Medan, Indonesia

Article Info

Article history:

Received 1 July, 2020
Revised 20 August, 2020
Accepted 28 December, 2020

Keywords:

DHF, Environmental Sanitation, 3M Behavior, House Index

ABSTRACT

Up to now, the case of DHF is still a health problem in Indonesia, in North Sumatra Province the incidence DHF is still high, and in Pematangsiantar city the incidence DHFis still a health problem. The purpose of this study was to determine the relationship between environmental sanitation, 3M behavior, and the House Index with the incidence ofDHFin the Work Area of the Bah Kapul Health Center, Pematang Siantar City. This study uses a case control approach. This research was conducted in the working area of the Bah Kapul Health Center, Pematang Siantar City during January 2021 to August 2021. The population of this study was patients withDHFwith a sample of 40 cases and a total of 80 control samples. The total sample was 120. The data analysis was univariate analysis. The results showed that the respondents who had good water reservoirs were 110 (91.7%) and respondents who had bad water reservoirs were 10 (8.3%), respondents who had good waste management facilities were 48 (40%) and respondents who have bad waste management sites are 72 (60%), respondents who have good 3M behavior are 78 (64.2%) and respondents who have bad 3M behavior are 42 (35.8%), and respondents who have bad 3M behavior positive larvae were 32 (26.7%) of respondents who were not positive for larvae were 88 (73.3%).

Corresponding Author:

Fadhlan Amir Lubis
Department Of Public Health,
Universitas Islam Negeri Sumatera Utara Medan
Email: fadhlanlubis05@gmail.com

1. INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is one of the highest diseases in the world found in almost all tropical and subtropical countries, with the number of cases increasing drastically worldwide, one estimate shows 390 million dengue infections per year (cardiable interval 284 million-528 million).) of which 96 million (67-136 million) manifest clinically (WHO, 2020).

Dengue Hemorrhagic Fever (DHF) is an infectious disease caused by the dengue virus that is transmitted by Aedes aegypti and Aedes albopictus mosquito vectors. Dengue Hemorrhagic Fever (DHF) is a public health problem that can result in death within a short period of time and frequently results in extraordinary events, creating panic in the community due to the risk of death, and its spread is extremely rapid (I. D. Saragih et al., 2019) .

DHF cases in Indonesia in 2017 were 68,407 cases with 493 deaths with a Case Fatality Rate (CFR) of 0.72%. The incidence of dengue fever in Indonesia in 2017 was 26.10 per 100,000 population(Kemenkes RI, 2019). DHF cases in Indonesia in 2018 were 65,602 cases with a total death toll of 467 people with a Case Fatality Rate (CFR) of 0.71%. The morbidity rate of Dengue Hemorrhagic Fever in Indonesia in 2018 was 24.75 per 100,000 population(Ministry of Health RI, 2019). Kcases of DHF in Indonesia in 2019 based on Indonesia's health profile in 2019, the number of DHF cases in Indonesia was 137,127 cases and much higher than 2018's 65,602 cases. The death rate for dengue cases in 2019 was 919 deaths, much higher than the death rate for dengue cases in 2018 with 467 deaths (Kemenkes RI, 2019)

The number of dengue cases in North Sumatra Province in 2017 was 5,454 cases with a Case Fatality Rate (CFR) in North Sumatra Province of 0.54%. In 2018 the number of dengue cases in North Sumatra Province increased to 5,623 cases with 26 deaths with a Case Fatality Rate (CFR) of 0.46%. In 2019, the number of dengue cases in North Sumatra Province was 7,772 cases. The number of dengue cases in North Sumatra Province in 2020 will be 7,584 cases(Central Bureau of Statistics of North Sumatra Province, 2020).

Vectors play a significant role in disease transmission, which increases dengue cases during the rainy season, when puddles of water form breeding grounds for mosquitoes (Agustina, 2021). Numerous research findings indicate that advertising and environmental conditions play a significant role in the prevalence of DHF; mobility and community density also play a significant role (Kemenkes RI, 2019). Dengue Hemorrhagic Fever (DHF) or Dengue Hemorrhagic Fever (DHF) is a term that refers to diseases caused by dengue virus infection as a public health issue. DHF is still prevalent in a number of countries, including tropical and subtropical regions with endemic or epidemic status (Hamzah, 2016)

Aedes aegypti mosquito habitats include bathtubs, buckets, flower vases, bird drinking stations, water reservoirs in dispensers, and water disposal areas beneath the refrigerator. Numerous etiological factors were associated with DHF, including host factors (age, sex, mobility), environmental factors (house density, mosquito breeding sites, mosquito resting areas, mosquito density, larva free rate, and rainfall), and behavioral factors. For example, during the rainy season, excessive sleep and activity patterns can result in flooding and puddles of water in a container/media that serves as a breeding ground for mosquitoes, such as hollows in bamboo fences, trees, used cans, old tires, roofs, or house bones (Fadlilah, 2017). Mosquito Nest Eradication (PSN) activities are used to eradicate vectors. Draining, closing, and burying mosquito nests are all methods for eradicating mosquito nests (3M) (Ibrahim, 2017).

Efforts to control Dengue Hemorrhagic Fever (DHF) can be done with 3M, namely closing water reservoirs, cleaning water reservoirs, and burying used goods. Aedes Aegypti. Lack of public attention about 3M behavior can increase the incidence of dengue fever even higher(Sari, 2017).

Environmental sanitation is closely related to the growth and reproduction process of the Aedes Aegypti mosquito, where the Aedes Aegypti mosquito can breed in a dirty environment and breed in containers that can accommodate rainwater. (Sunarya, 2019). House Index (HI) is the percentage of positive larvae of all houses inspected, the higher the HI value, the more positive houses there are Aedes Aegypti mosquito larvae(Suryanto, 2018).

According to Kurniawan (2016), many people continue to oppose mosquito nest eradication efforts due to a lack of public awareness about the critical nature of mosquito nest eradication. Individuals continue to disregard routine mosquito nest eradication practices, such as failing to close water reservoirs, draining bathtubs once a week, burying used goods, and hanging clothes behind closed doors (F. Saragih, 2020). The purpose of the ovitrap is to attract adult mosquitoes to lay eggs on its surface, where they will hatch and enter the water reservoir. Ovitrap is a material that can be made from recycled buckets, bottles, and gauze. The ovitrap is easy to use and can be used anywhere without causing adverse environmental effects (Rati, 2016).

Housewives believe that eradicating mosquito nests should not be a routine practice, as mothers believe it is ineffective at controlling mosquitoes (Tarigan, 2020). Empowerment is critical for improving mosquito and ovitrap nest eradication practices, particularly among housewives (Susianti, 2017).

Based on the results of an initial survey conducted at the Bah Kapul Health Center in Siantar Sitalasari District, the number of dengue cases in 2019 was 66 cases, and in 2020 the number of dengue cases at the Bah Kapul Health Center was 23 cases. Based on the description of the background above, the researcher is interested in conducting research on cases of dengue fever in the working area of the Bah Kapul Health Center with environmental sanitation factors, 3M behavior, and larvae House Index.

2. RESEARCH METHODE

This type of research is a quantitative study using a case control approach by comparing the case group with the control group based on their exposure status with the aim of identifying risk factors for the occurrence of a disease.

The location of the research was carried out in the work area of the Bah Kapul Health Center, Siantar Sitalasari District. The time of the research was carried out during the period from January 2021 to June 2021.The population in this study were all patients with dengue hemorrhagic fever (DHF) who were recorded in the working area of the Bah Kapul Health Center in 2020.

The sample of this study was a case sample and a control sample based on data obtained from the Bah Kapul Health Center which consisted of Setia Negara Village, Bukit Sofa Village, and Bah Kapul Village. The sample of this study used a comparison of cases and controls of 1:2 with the number of case samples as many as 40 cases and the number of control samples as many as 80. The total sample was 120.

The sampling of cases in this study used a total sampling technique where the entire population suffered from dengue cases in 2019 and 2020 in the Bah Kapul Health Center Work area. The control sample was taken using a purposive sampling technique, namely

sampling based on certain considerations such as the characteristics or characteristics of the population that were previously known.

The data used in this study are primary data and secondary data. Primary data was obtained by direct observation to the research location, through interviews with the research population, and by providing questionnaires. Secondary data was obtained by collecting data from the report on the working area of the Bah Kapul Health Center. The research instrument used was a questionnaire sheet and an observation sheet. The data analysis that will be used in this research is univariate analysis.

3. RESULT AND ANALYSIS

Tabel 1. Distribution of Characteristic Respondent

Variable	Frequency	%
Age		
0-11 years old	3	2.5
12-25 years old	16	13.3
26-45 years old	66	55.0
46-65 years old	35	26.7
Gender		
Man	36	30.0
Woman	84	70.0
Level of education		**10.8**
Primary school	13	10.8
Junior High School	18	15.0
Senior High School	70	58.3
Diploma or Bachelor	19	15.8
Work		
Does not work	80	66.7
Entrepreneur	30	25.0
Private employees	7	5.8
civil servant	3	2.5

Based on the results of table 4.1 above, it can be seen that the most respondents in the 26-65 year age group were 66 people (55%), in the 46-65 year age group there were 35 people (26.7%), the 12-25 year age group were 16 people (13,3%), and only 3 people in the 0-11 year age group (2.5%0. In the gender characteristics of the respondents, it can be seen that the most respondents were female respondents as many as 84 people (70%), and the male gender group 36 men (30%). Based on the level of education, it can be seen that the respondents with the highest education level were 70 high school graduates (58.3%), the education level was Diploma or bachelor degree as many as19 person (15.8%), at the level of education graduated from junior high school as many as 18 people (15%), and the lowest level of education, namely the education level of elementary school graduates equivalent to only 13 people (10.8%).

Tabel 2. Distribution of DHF incident, Water Storage Frequency, Behavior 3M

Variable	Frequency	%
DHF Incident		
DHF Patient	40	33.3%
Not a DHF patient	80	67.7%
Water Reservoirs		
Bad	10	8.3%
Well	110	91.7%
Waste Management Site		
Bad	72	60.0%
Well	48	40.0%
Behavior 3M(closing, Draining, and Burying)		
Bad	43	35.8%
Well	78	64.2%
House Index		
Flickr available/positive	32	26.7%
None/Negative Flick	88	73.3%

Based on the results of Table 1.2, data obtained that as many as 80 respondents suffered from DHF, and as many as 40 respondents did not suffer from DHF. There were 110 (91.7%) respondents who had a good category of water reservoirs and 10 (8.3%) respondents who had a bad category of water reservoirs. Respondents who have a bad category of waste management as many as 72 (60.0%) and respondents who have good waste management as many as 48 (40%). Respondents who have 3M behavior in the good category are 78 (64.2%) and respondents who have 3M behavior in the bad category are 43 (35.8%). There were 32 (26.7%) larvae present/positive and 88 (73.3%).

4. DISCUSS

Environmental sanitation can be used as an indicator in determining the good or bad condition of an environment . Good environmental sanitation conditions will inhibit the breeding of Aedes Aegyoti mosquitoes so that Aedes Aegypti mosquito breeding is not optimal. DHF transmission will have a high potential if there are many water reservoirs that are rarely cleaned and become a place for Aedes Aegypti mosquitoes to breed.(Yati, 2020). Water reservoirs are places to hold water used for daily needs such as baths, buckets, and others. Water reservoirs are a place for Aedes Aegypti mosquitoes to breed. The more people in one house, the more water reservoirs are needed. Draining water reservoirs is one of the behaviors that aims to prevent the breeding of Aedes Aegypti mosquitoes in breeding and laying their eggs.(Octaviani, 2021).

The preferred place for Aedes Agypti mosquitoes to breed is a place that contains clean water which is located inside the house or outside the house which is not more than 500 meters from the house. The types of places favored by Aedes Aegypti mosquitoes for breeding are water reservoirs for daily needs such as drums, bathtubs, buckets, and water reservoirs from used/unused items such as cans, used tires, bottles, flower vases.(Zen & Rahmawati, 2015). According to Handayani (2019), water reservoirs that are not cleaned will become breeding grounds for Aedes Aegypti mosquitoes, cleaning water reservoirs in the house such as bathtubs must always be cleaned once a week, the habit of cleaning bathtubs can prevent the occurrence of dengue fever.

Waste management is an activity to manage waste by choosing items that will still be reused, minimizing items that are not used, avoiding the use of single-use items, recycling items that are not reused. The purpose of waste management is to control the Aedes Aegytpi mosquito population and prevent dengue transmission(Rosmala, 2019). according toArdianti (2018) the presence of garbage around the home environment is at risk of Dengue Hemorrhagic Fever (DHF), garbage around the home environment can be a place/container to accommodate puddles of water such as used tires, used bottles, plastic waste that allows it to be used as a place for Aedes mosquitoes Aegypti lays eggs and breeds (Ardianti, 2018). Other research conducted Rohmani (2017) it is found that there are still many people who do not manage waste, dispose of garbage in its place and store used goods so that the potential for the occurrence of Dengue Hemorrhagic Fever is greater.

The type of waste that can be a breeding ground for the Aedes aegypti mosquito is the type of waste that cannot be burned, such as used cans, broken glass, used bottles that can accommodate puddles of rainwater. The existence of garbage around the home environment is at risk of dengue fever, garbage around the home environment can be a place or container to accommodate puddles of water such as used tires, used bottles, plastic waste that allows Aedes aegypti mosquitoes to lay eggs and breed.(Ardianti, 2018).

Eradication of Aedes aegypti mosquito nests that cause dengue fever is a policy that has been made by WHO (World Health Organization) known as 3 M (draining, closing, recycling/reusing used goods). The factor causing the high morbidity and mortality rate caused by Dengue Hemorrhagic Fever (DHF) is due to the behavior of people who do not maintain environmental hygiene and do not apply the 3M practice routinely to eradicate the Aedes Aegypti mosquito nest. Eradication of mosquito nests with a 3M method must be carried out regularly, especially during the rainy season(Nendissa, 2019).

According to Ardianti (2018), 3M practices affect the incidence of DHF, because the draining of water reservoirs must be carried out regularly once a week so that Aedes Aegypti mosquitoes cannot breed in water reservoirs. Closing water reservoirs such as drums and buckets can prevent Aedes Aegypti mosquitoes from entering and laying their eggs in water reservoirs (Ernyasih, 2019). Burying used goods can suppress the breeding of Aedes Aegypti mosquitoes, this is because Aedes Aeghypti mosquitoes prefer places that are not grounded and clean water.

The increase in the presence of the Aedes aegypti mosquito vector can affect the transmission of DHF in the community, the number of dengue hemorrhagic fever (DHF) vector populations can be measured using the House Index (HI) entomology indicator which aims to determine the level of DHF transmission, with 2 categories, increased transmission of DHF is said to be low if the House Index (HI) value is <5%, and the rate of dengue transmission is if the House Index (HI) value is 5% (Kusumawati, 2020).

Dengue hemorrhagic fever can be prevented effectively through the 3M program (draining, closing, and burying), which is a simple and cost-free method, but this program is not implemented well in CengkehTuri Village, North Binjai District (Tarigan, 2020). The failure to implement the 3M program (draining, closing, and burying) is inextricably linked to the community's motivation for healthy living habits, and the community's understanding and treatment of dengue hemorrhagic fever is still very limited (Nasution, 2019). People's motivation for healthy living behaviors will encourage the community to learn about DHF and how to prevent it (Cahyati, 2016; Nurjana, 2017).

The implementation of monitoring of Aedes Aegypti mosquito larvae in terms of the values of HI (House Index), CI (Container Index), BI (Breteau Index), and ABJ (Flat Free Rate), which are used to monitor the density of Aedes aegypti mosquito larvae in the spread

of the dengue virus. Density of Aedes Aegypti mosquito larvae based on the House Index (HI) describes the spread of Aedes Aegypti mosquitoes in an area. According to WHO (World Health Organization Health) an area is considered to have a high risk of spreading Dengue Hemorrhagic Fever (DHF) if the HI (House Index) is > 10%, meanwhile, it is considered to have a low risk of spreading Dengue Hemorrhagic Fever (DHF) if it has HI (House Index) < 1%. The House Index depends on the actions taken by both individuals and society,(Perwitasari, 2018). From the results of the study, it was found that from the 120 houses studied there were 32 houses positive for larvae or there were larvae, with the House Index value as follows:

$$House\ Index\ (HI) = \frac{jumlah\ rumah\ yang\ terdapat\ jentik}{jumlah\ rumah\ yang\ diperiksa} \times 100\%$$

$$HI = \frac{32}{120} \text{ x } 100\%$$

$$= 26\%$$

Destiny Figure (Lartic Density) the House Index value of 26% is in DF 4, which means that the larval density level in the working area of the Bah Kapul Health Center is included in the medium larval density category. Results of research conducted Primary (2019)showed that of the 100 households studied, only 9 houses were larva positive and the House Index value was obtained as much as 9% with a Density Figure 3 value which means medium larval density. Results of research conductedSulistyorini (2016) it was found that the vector density of Dengue Hemorrhagic Fever (DHF) based on the House Index value was 33% with a Density Figure (DF) value of 5 with larval density in the medium category.

The high incidence of dengue fever at the Bah Kapul Health Center can be caused by lack of action in draining water reservoirs, lack of time to drain water reservoirs after returning from work, as well as draining water reservoirs that are not carried out routinely and do not use abate powder in water reservoirs.

The house index value at the Bah Kapul Health Center is still high because there are still many respondents who do not use abate powder in their water reservoirs, respondents who do not use abate powder have Aedes aegypti mosquito larvae compared to respondents who use abate powder in their water reservoirs and the actions of respondents who not closing the water reservoir will make it easier for mosquitoes to lay their eggs and breed, and the type of water reservoir used and the color of the water reservoir which tends to be dark so that the presence of Aedes aegypti mosquito larvae is unknown.

5. CONCLUSION

From the results of the research conducted, it was found that the prevalence of good category water reservoirs was 110 respondents and only 10 respondents of bad category of water reservoirs. The prevalence of good category of waste management was 48 respondents and bad category of waste management was 72 respondents. The prevalence of 3M behavior in good category was 77 respondents and 3M behavior is in bad category as many as 43 respondents. The Prevalence of the House Index there are 32 respondents and the House Index has no larvae as many as 88 respondents.

It is necessary to increase the routine 3M action that must be carried out by the community, especially in draining water reservoirs which is carried out at least once a week and always paying attention to the larvae in water reservoirs and closing water reservoirs to prevent Aedes Aegypti mosquitoes from breeding

6. REFERENCES

Agustina, D. (2021). Environmental and Behavioral Factors Analysis of Malaria Incidents. *Jurnal Ilmiah Permas: Jurnal Ilmiah STIKES Kendal*, *11*(2), 423–432. https://doi.org/10.32583/pskm.v11i2.1198

Ardianti, W., Lapau, B., & Dewi, O. (2018). Determinan Kejadian Demam Berdarah Dengue (DBD) Di Wilayah Kerja Puskesmas Harapan Raya. *Jurnal Photon*, *9*(1).

Badan Pusat Statistik Provinsi Sumatera Utara. (2020). *Provinsi Sumatera Utara dalam Angka 2019*.

Cahyati. (2016). Penurunan Container Index (CI) Melalui Penerapan Ovitrap Di Sekolah Dasar Kota Semarang. *Unnes Journal of Public Health*, *5*(4), 330–335. http://journal.unnes.ac.id/sju/index.php/ujph

Ernyasih. (2019). Hubungan Karakteristik Responden, Pengetahuan dan Sikap Kepala Keluarga Terhadap Praktik Pencegahan Demam Berdarah Dengue (DBD). *J Ilmu Kesehat Masy*, *8*(1), 6–13.

Fadlilah, I. (2017). Pengaruh Berbagai Jenis Atraktan Pada Lethal Ovitrap Terhadap Nyamuk Yang Terperangkap Di Kelurahan Karangklesem Kecamatan Purwokerto Selatan Kabupaten Banyumas Tahun 2016. *Keslingmas*, *37*(1), 12–19.

Fauziah Nasution, Putra Apriadi Siregar, E. Y. (2019). Improvement of Knowledge and Attitude of Community Figure In Preventing Malaria Disease Through Discussion With Leaflet And Module. *Jurnal Kesehatan*, *12*(2), 154–164.

Hamzah, E. (2016). Perbedaan Ovitrap Indeks Botol, Ember dan Port Mosquito Trap sebagai Perangkap Nyamuk Aedes sp. di Area Kantor Kesehatan Pelabuhan Kelas II Samarinda Wilayah Kerja Sangatta Kabupaten Kutai Timur. *Higiene*, *2*(3), 155–158.

Ibrahim. (2017). Tingkat Pengetahuan Masyarakat tentang Penyakit Malaria di Tanjung Kertang Kelurahan Rempang Cate. *Jurnal Ilmiiah Zona Kesehatan*, *11*(November), 54–62.

Kemenkes RI. (2019). *Profil Kesehatan Indonesia Tahun 2018*.

Kurniawan, T. P. (2016). Studi Angka Bebas Jentik (ABJ) dan Indeks Ovitrap Di Perum Pondok Baru Permai Desa Bulakrejo Kabupaten Sukoharjo. *Jurnal Kesehatan*, *1*(2), 72–76.

Kusumawati, N., & Sukendra, D. M. (2020). Spasiotemporal Demam Berdarah Dengue berdasarkan House Index, Kepadatan Penduduk dan Kepadatan Rumah. *HIGEIA*, *4*(2), 168–177.

Nendissa, A. R. (2019). Gambaran Perilaku Pencegahan 3M Plus terhadap Kejadian DBD di Wilayah Kerja Puskesmas Kayu Putih. *Moluccas Health Journal, 1*(3), 87–93.

Nurjana, M. A. (2017). Preferensi Aedes aegypti Meletakkan Telur pada Berbagai Warna Ovitrap di Laboratorium. *BALABA*, *13*(1), 37–42. https://doi.org/doi.org/10.22435/blb.v13i1.256

Octaviani, Kusuma, M. P., & Wahyono, T. Y. M. (2021). Pengaruh Tempat Penampungan Air dengan Kejadian DBD di Kabupaten Bangka Barat Tahun 2018. *Jurnal Vektor Penyakit*, *15*(1), 63–72.

Perwitasari, D., Res, R. N., & Ariati, J. (2018). Indeks Entomologi dan Sebaran Vektor Demam Berdarah Dengue di Provinsi Maluku Utara Tahun 2015. *Media Litbangkes*, *28*(4), 279–288.

Pratama1, I. G. O. P., & Aryasih2, I. G. A. M. (2019). Gambaran tingkat Kepadatan Nyamuk Aegypti Di Wilayah Kerja Unit Pelaksana Teknis Kesmas Sukawati I Ttahun 2019. *Jurnal Kesehatan Lingkungan*, *9*(2), 171–178.

Rati, G. (2016). Perbandingan efektivitas berbagai media ovitrap terhadap jumlah telur Aedes Spp yang Terperangkap di Kelurahan Jati Kota Padang. *J Kesehat Andalas*, *5*(2), 385–389.

Rohmaniah, A. F., Susanti, Y., & PH, L. (2017). Gambaran Perilaku Keluarga Daerah Rural Dan Urban Dalam Pencegahan Kejadian Demam Berdarah Di Daerah Endemis Demam Berdarah. *Community of Publishing in Nursing*, *5*(2), 107–114.

Rosmala, F., & Rosidah, I. (2019). Hubungan Faktor Resiko Kesehatan LingkunganDalam Pengelolaan Sampah Padat Dengan Kejadian Demam Berdarah Dengue Di Kelurahan Hegarsari Kecamatan Pataruman Kota Banjar. *Jurnal Kesehatan Komunitas Indonesia*, *15*(1),

23–34.
Saragih, F. (2020). The Effectiveness of The Media Leaflets and Film on Knowledge of The Attitude snd Skills of Cadres in Ovitrap Making. *International Archives of Medical Sciences and Public Health*, *1*(2), 107–117.
Saragih, I. D., Falefi, R., Pohan, D. J., & Elliandy, S. R. H. (2019). Analisis Indikator Masukan Program Pemberantasan Demam Berdarah Dengue Di Dinas Kesehatan Provinsi Sumatera Utara. *Scientific Periodical of Public Health and Coastal Health*, *1*(1), 32–41. https://doi.org/10.30829/contagion.v1i01.4821
Sari, D. O. (2017). *Hubungan Perilaku 3M Dengan Kejadian Demam Berdarah Dengue di Wilayah Kerja Puskesmas Lingkar Barat Kota Bengkulu*.
Sulistyorini, E., Hadi, U. K., & Soviana, S. (2016). Faktor Entomologi Terhadap Keberedaan Jentik Aedes sp. Pada Kasus DBD Tertingi Dan Terendah Di Kota Bogor. *Jurnal MKMI*, *12*(3), 137–147.
Sunarya, A. (2019). Hubungan Sanitasi Lingkungan Dengan Kejadian Penyakit Demam Berdarah Dengue (DBD) di Wilayah Kerja Puskesmas Sentosa Baru Kecamatan Medan Perjuangan Kota Medan Tahun 2019. *Αγαη*, *8*(5), *55*.
Suryanto, H. (2018). Analisis faktor perilaku, penggunaan kasa, dan. *Jurnal Kesehatan Lingkungan*, *10*(1), 36–48.
Susianti. (2017). Government Strategy in the Eradication of Dengue Hemorrhagic Fever (DHF) in Jambi City. *J Bina Praja*, *9*(2), 243–253.
Tarigan, M. I. (2020). Health Film Promotion Media And Motivation On Community Knowledge In Preventing Dengue Fever. *International Archives of Medical Sciences and Public Health*, *1*(1), 37–50.
Yati, L. M. C., Prasetijo, R., & Sumadewi, N. L. U. (2020). Hubungan Sanitasi Lingkungan Dengan Keberadaan Jentik Nyamuk Terhadap Kejadian DBD di Desa Kesiman Kertalangu Kecamatan Denpasar Timur. *HIGIENE*, *6*(1), 37–41.
Zen, S., & Rahmawati, D. (2015). *Kepadatan Jentik Nyamuk Aedes Spp Ditinjau Dari Nilai Breteu Index (BI), Container Index (CI), dan Human Index (HI) di Kelurahan Metro Kecamatan Metro Pusat Kota Metro Lampung Tahun 2015. 294–3030. 294–3030*.