6._Analysis_of_the_Environmental_Factors_and_the_Efforts_of.pdf

by

FILE	6._ANALYSIS_OF_THE_ENVIRONMENTAL_FACTORS_AND_THE_EFFORTS_OF.PDF (379.33K)		
TIME SUBMITTED	15-JUN-2020 09:54PM (UTC+0700)	WORD COUNT	4841
SUBMISSION ID	1344291313	CHARACTER COUNT	23965

Analysis of the Environmental Factors and the Efforts of the Community to Avoid the Mosquito Bites Against the Endemic Dengue in Rappocini Sub-District, Makassar City

Muh. Kahfi
Faculty of Public Health, Hasanuddin University,
Jl. Perintis Kemerdekaan Km. 10, Tamalanrea Indah, Tamalanrea, Tamalanrea Indah, Tamalanrea, Kota Makassar, Sulawesi Selatan 90245, Indonesia
kahfi.muh.k3@gmail.com

Hasanuddin Ishak
Faculty of Public Health, Hasanuddin University,
Jl. Perintis Kemerdekaan Km. 10, Tamalanrea Indah, Tamalanrea, Tamalanrea Indah, Tamalanrea, Kota Makassar, Sulawesi Selatan 90245, Indonesia
hasnuddin.ishak@gmail.com

Ridwan M. Thaha
Faculty of Public Health, Hasanuddin University, Jl. Perintis Kemerdekaan Km. 10, Tamalanrea Indah, Tamalanrea, Tamalanrea Indah, Tamalanrea, Kota Makassar, Sulawesi Selatan 90245, Indonesia
ridwan_609@yahoo.com

ABSTRACT

This research aimed to analyze the differences of the environmental factors and the efforts of the community to avoid the mosquito bites in the dengue endemic area and in dengue non-endemic area in Rappocini Sub-District. Makassar City. The research used the ecological study design with the analytical or observational comparative study. The total samples comprised 125 households. which were divided into two areas: 62 households in the endemic area and 63 households in the non-endemic area. The research was conducted from May through July, 2016. The samples were chosen using the purposive sampling technique. The data were then analyzed using Mann-Whitney and Fisher's Exact tests and the logistic regression test. The data were processed SPSS version 20. The research results indicated that the difference test revealed that the variables which a significant difference towards the endemic denque were the temperature (p=0.031), the humidity (p=0.000), the lightning (p=0.000), the presence of larvae (p=0.020), the uses of mosquito nets (p=0.046), the anti• mosquito chemicals (p=0.003). the installation of wire netting (p=0.001), the uses of long sleeves (p=0.000), while the variable which did not have a difference with the level of endemic dengue was the mobility of the population (p=0.592). The result of the logistic regression test showed that the variables which caused the most significant difference between the endemic area and the non-endemic area in Rappocini Sub-District was the uses of the anti-mosquito drugs (p=0.001).

CCS Concepts

•**Social and professional topics → User characteristics**

Keywords

environmental factors; efforts to avoid mosquito bites; endemic dengue

ICHSM 2018, June 8–10, 2018, Tsukuba, Japan

ACM ISBN 978-1-4503-6435-5/18/06...$15.00
DOI: https://doi.org/10.1145/3242789.3242810

INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is an infectious disease characterized by sudden high heat without any obvious cause with red spots on the skin. DHF is caused by dengue virus that is transmitted to humans through the bite of Aedes mosquito [1]. Dengue Hemorrhagic Fever is found in tropical and sub tropical areas. Asia ranks first in the number of DHF patients each year. From 1968 to 2009, the World Health Organization (WHO) noted Indonesia as the country with the highest dengue fever case in Southeast Asia [2].

In 2010 until 2014, the Incidence Rate (IR) and Case Fatality Rate (CFR) in dengue cases in Indonesia tend to fluctuate. In 2010 IR number = 65,70 per 100.000 population and CFR = 0,87%, year 2011 IR number = 27,56 per 100.000 population and CFR = 0,91%, 2012 IR number = 37,11 per 100.000 population and CFR = 0,90%, year 2013 IR number = 45.85 per 100,000 population and CFR = 0.77%. Districts / Municipalities infected by DHF from 2010 to 2013 increased from 400 districts / cities to 436 districts / cities (88%) [3]

Makassar City consist of 14 subdistricts, 143 sub-districts and adjacent to Gowa and Maros regencies with high population activity. Each year dengue cases occur in every District, then the city of Makassar is classified as endemic areas of DHF. The Government of Makassar City has set 5 districts as areas that are prone to the spread of DHF. The five sub-districts are Tallo, Panakkukang, Tamalanrea, Biringkanaya and Rappocini sub-districts [4].

The increase and spread of dengue cases in urban areas is influenced by several very complex factors. Air temperature is one of the environmental factors that affect the growth of Ae mosquitoes. Aegypti with an optimum temperature of 25-27 ° C, at temperatures below 10 ° C or above 40 ° C growth will stop [5].

The results of Waluyo, et al [6] showed that there was a significant influence between the lighting on the case and the endemicity of Dengue Hemorrhagic Fever in Benowo District. With the value of Odd ratio of 3.75 means that respondents who have bad lighting possible for Dengue Hemorrhagic pain is 4 times greater than respondents who have good lighting.

Biological factors are considered to play a role in dengue endemicity is Aedes aegypti larvae density [7]. The density of the larvae is influenced by temperature, humidity, lighting, house type,

house density, population density, occupant density, rainfall, wind velocity, vegetation, topography of vector existence and distance between houses.

There are several ways to avoid the bite of Aedes mosquitoes, ie sleeping with mosquito nets, scalp skin with anti-mosquito repellent, installing mosquito wire (18 mesh) in windows and other ventilation holes. According to Orphans, there are several ways to avoid mosquito bites in the home environment, especially during the day, ie Wearing clothes that are thick or loose, using mosquito poison, avoid napping, use bed nets during sleep, remove clothes behind doors inside room, cleaning and smooth the flow of clogged water, and using wire netting in the house ventilation [8].

Factors related to the incidence of DHF with some community habits in preventing DHF diseases include the installation of wire netting on ventilation, the use of mosquito nets, the use of repellent (repellent) in the morning and afternoon, and the habit of wearing long sleeves when out of the house.

The best way to prevent this disease is by eradication of mosquito larvae transmitted or known as the Eradication Mosquito Dengue Hemorrhagic [3]. Therefore, in the effort to determine the control of DHF incidence in Rappocini sub-district which become endemic region in Makassar City through eradication of Aedes aegypti mosquito larvae. Thus in this work, the differences of environmental factors and community efforts in avoiding mosquito bites in endemic areas of DHF and non-endemic DHF (sporadic) in Rappocini District Makassar City is analyzed.

2. METHODOLOGY

2.1 Research Type

The design of this study used the design of ecological studies with analytic or analytic observational comparative studies by comparing environmental factors and community efforts to avoid mosquito bites in dengue endemic areas and non-endemic areas of DHF. Analytic research is based on the presence or absence of relationship analysis between variables that can be done by statistical test or significance test in accordance with data and type of analysis [9]. The study of ecology is also called the study of population correlation which is an epidemiological study with population as the unit of analysis, which aims to describe the correlative relationship between disease and its causal factors (Noor, 2008).

2.2 Location and Time of Study

The research will be conducted in 2 sub-districts in Rappocini sub-district, Makassar City, Karunrung urban village as endemic area of DBD and Kelurahan Ballaparang non-endemic areas of dengue (sporadic). The research will be conducted from May to July 2016.

2.3 Population and Sample

Population in this research is entire house, which is in Karunrung Village as endemic area of DBD and Kelurahan Ballaparang as non-DHF endemic area. The sample in this study is household or family with dengue case or no dengue cases that are domiciled in Kelurahan Karunrung that endemis DBD and Ballaparang Village which is non-endemic DHF. The sampling was done using purposive sampling. The sample size 125.

2.4 Data Collection

Primary data were obtained by measuring independent variables including temperature, humidity, and lighting, observation or direct observation in water reservoirs to determine the presence of larvae by examining the TPA of each house sample and direct interviews to the respondents using a questionnaire about population mobility and community efforts in avoiding mosquito bites.

Secondary data was obtained through literature search and all data obtained from related institutions such as Meteorology, Climatology and Geophysics Agency (BMKG) IV of Makassar City to find out temperature and humidity data for the last 10 years, BPS Makassar and Health Office of Makassar Sub2 P2M Subdistrict (Infectious Disease Restriction), and Kassi-Kassi Health Center and Puskesmas Balla Parang, Rappocini Sub-District, Makassar City to find out data on DHF cases with the last 10 years (2006 - 2015)..

2.5 Data Analysis

Data analysis was done using SPSS program version 2 Bivariate analysis was performed to see the independent relationship between the dependent variab nd the independent variable. Statistical analysis used was Mann-Whitney test and Fisher's Exact (X2) test to determine the significance level of variable difference between endemic areas of DBD and non Endemis DHF. The error rate used is 5%, so there is a relationship if the value of p <0.05. In addition, multivariate analysis was conducted to further understand which variables are most influential with endemicity of DHF disease. The variable to be measured in this multivariate analysis is the variable having p value <0,05. The analysis was continued by logistic regression test.

3. RESULT AND DISCUSSION

3.1 Bivariate Analysis

3.1.1 Physical Environmental Factors

Physical environmental factors include house temperature, humidity, and lighting.

In this study categorized the optimal temperature when the average home room temperature of 250C-300C and not optimal if the average home room temperature ≤ 240C. Distribution of respondent home based on house temperature in endemic and non endemic areas of DHF can be seen in Table 1.

Table 1. Differences of House Temperature in Endemic and Non Endemic Areas of Dengue in Rappocini Sub-district

Endemis Status	Temperature ˚C				Std Deviation	Sig
	N	Max	Min	Mean		
Endemis	62	32.7	26.8	29.3	1.31	
Non Endemis	63	35.7	26.3	30.0	2.45	0.031

Based on Table 1 shows that in endemic areas have a maximum temperature of 32.7˚C, a minimum temperature of 26.8˚C, and an average temperature of 29.3˚C. While at non endemic area has maximum temperature equal to 35.7˚C, minimum temperature 26.3˚C, and average temperature 30.0˚C. Mann-Whitney test result gives p value = 0.031 because p value <0.05, hence can be concluded that there is difference of house temperature between endemic area with non endemic area DBD in Kecamatan Rappocini.

In this study the categorized humidity when the room moisture ≥ 60% and not optimal when the humidity of the room <60%. Residential distribution of respondent based on moisture in endemic and non endemic areas of DHF can be seen in Table 2.

Based on Table 2 indicates that in the endemic areas as well as having moisture with a maximum value of 79.0%, the minimum value of 58.0%, and an average value of 72.9%. While the non-endemic areas of the area have a maximum moisture value 79.0%, a minimum value of 55.0%, and an average value of 68.9%. Mann-Whitney test result gives p value = 0,000 because p value <0,05, hence can be concluded that there is significant difference of humidity between endemic area and non regionendemic DHF in Rappocini District.

Table 2. Differences in House Humidity in Endemic and Non Endemic Areas of Dengue in Rappocini Sub-district

Endemis Status	Humidity (%)				Std Deviation	Sig
	N	Max	Min	Mean		
Endemis	62	79.0	58.0	72.9	4.86	
Non Endemis	63	79.0	55.0	68.9	5.66	0.000

In lighting is categorized dark when the intensity of light in the house is <20 lx and not dark if the intensity of light in the house is ≥20 lx. Residential distribution of respondents based on house humidity in endemic and non endemic areas of DHF can be seen in Table 3.

Based on Table 3 shows that the lighting at endemic areas has a maximum value of 20.0 Lx, a minimum value of 10.0 Lx, and an average rating of 12.7 Lx. While in the non endemic areas have the lighting with a maximum value of 25.0 Lx, the minimum value of 10.0 Lx, and an average value of 15.7 Lx. Mann-Whitney test result gives p value = 0,000 because p value <0,05, hence can be concluded that there is significant difference of lighting in house between endemic area with non endemic area of DBD in District of Rappocini.

Table 3. Differences of Home Lighting In Endemic and Non Endemic Areas of Dengue in Rappocini Sub-district

Endemis Status	Lighting (Lx)				Std Deviation	Sig
	N	Max	Min	Mean		
Endemis	62	20.0	10.0	12.7	3.58	
Non Endemis	63	25.0	10.0	15.7	4.48	0.000

3.1.2 The Existence of Larvae.

In the presence of larvae are categorized positively if found larvae in the water reservoir in the house and categorized negatively if not found larvae at the water reservoir in the house. Distribution of respondent households based on the presence of larvae in endemic and non-endemic areas of DHF can be seen in Table 4.

Table 4 shows that the presence of larvae in the endemic areas of more positive larval houses is 16 houses (25.8%) than non-endemic areas for only 6 houses (9.5%). While negative house larvae in endemic area fewer that is as much 46 house (74,2%) than non endemic area counted 57 house (90,5%). Fisher's Exact test result gives p value = 0,020 because p value <0,05, hence can be concluded that there is difference of existence of larva between endemic area with non endemic area of DBD in District of Rappocini

Table 4. Differences in Larva Existence in Endemic and Non Endemic Dengue Areas in Rappocini Sub-district

existence of larvae	Endemis		Non Endemis		Total		Sig
	n	%	n	%	N	%	
Positive	16	25.8	6	9.5	22	17.6	0.020
Negative	46	74.2	57	90.5	103	82.4	
Total	62	100	63	100	125	100	

3.1.3 Mobility

The mobility of respondents is categorized high if respondents routinely perform activities outside the home, otherwise categorized low if respondents do not routinely perform activities outside the home. Distribution of respondents' home based on mobility in endemic and non endemic areas of DHF can be seen in Table 5.

Based on Table 5 it can be seen that respondents who live in dengue endemic areas are only 43.5% who do high mobility and 56.5% with low mobility, whereas respondents who live in non-endemic areas of DHF there is 49.2% who do high mobility and 4.8% with low mobility. Based on statistical test result using Fisher Exact test gives p value = 0,592 because p value> 0,05, hence can be concluded that there is no significant difference of population mobility between endemic area of DHF with non endemic area of DBD in District of Rappocini.

Table 5. Differences in Respondent Mobility in Endemic and Non Endemic Dengue Areas in Rappocini Sub-district.

Mobility	Endemis		Non Endemis		Total		Sig
	n	%	n	%	N	%	
Positive	27	43.5	31	49.2	58	46.4	0.592
Negative	35	56.5	32	50.8	67	53.6	
Total	62	100	63	100	125	100	

3.1.4 Avoid Mosquito Bites.

Community action to avoid mosquito bites include, use of mosquito nets, the use of anti-mosquito repellent, wire netting, and the use of long-sleeved clothes.

The distribution of respondent using mosquito nets in endemic and non endemic areas of DHF can be seen in Table 6.

Based on Table 6 shows that in non endemic areas more use of mosquito net that is as much as 68,3% than endemic area only as much 50.0%. Fisher's Exact test result gives p value = 0,046 because p value <0,05, hence can be concluded that there is difference of behavior using mosquito net between endemic area with non endemic area DBD in Sub Rappocini.

Table 6. Differences in Behavior Using Mosquito Nets in Endemic and Non Endemic Areas of Dengue in Rappocini Sub-district

Mosquito Net	Endemis		Non Endemis		Total		Sig
	n	%	n	%	N	%	
Positive	31	50.0	43	68.3	74	59.2	0.046
Negative	31	50.0	20	31.7	51	40.8	
Total	62	100	63	100	125	100	

The distribution of respondents using mosquito repellent in endemic and non endemic areas of DHF can be seen in Table 7.

Based on Table 7 shows that in non-endemic areas more use of mosquito repellent that as much as 92.1% than endemic areas only as much as 71.0%. Fisher's Exact test results give p = value 0.003 because the value of p <0.05, it can be concluded that there is a significant difference in behavior using mosquito repellent between endemic areas with non-endemic areas of DHF in Rappocini District.

Table 7. Differences in Mosquito Drug Use Behavior in Endemic and Non Endemic Dengue Areas in Rappocini Sub-district

Mosquito Repellent	Endemis		Non Endemis		Total		Sig
	n	%	n	%	N	%	
Positive	44	71.0	58	92.1	102	81.6	0.003
Negative	18	29.0	5	7.9	23	18.4	
Total	62	100	63	100	125	100	

Distribution of wire screen users in endemic and non endemic areas of DHF can be seen in Table 8. Based on Table 8 shows that in non endemic areas more use of wire gauze is 49.3% than endemic area only as much 19.4%. Fisher's Exact test result gives p value = 0,001 because p value <0,05, hence it can be concluded that there is significant difference of usage behavior of wire mesh between endemic area with non endemic area of DBD in Kecamatan Rappocini.

Table 8. Differences in Behavior of Wire Usage in Endemic and Non Endemic Areas of Dengue in Rappocini Sub-district.

Installation of Wire	Endemis		Non Endemis		Total		Sig
	n	%	n	%	N	%	
Positive	12	19.4	31	49.2	43	34.4	0.001
Negative	50	80.6	32	50.8	82	65.6	
Total	62	100	63	100	125	100	

Distribution of respondents in the use of long-sleeved shirts in endemic and non-endemic areas of DHF can be seen in Table 9. Based on Table 9, it shows that in non-endemic areas, more use of long-sleeved shirts is 73.0% than endemic areas of 38.7 %. Fisher's Exact test result gives p = 0,000 value because p value <0,05, it can be concluded that there is significant difference in the behavior of long-sleeved shirt between endemic areas with non-endemic areas of DHF in Rappocini Sub-district.

Table 9. Differences in Behavior of Long Arm Length In Endemic and Non Endemic Areas of Dengue in Rappocini Sub-district

Long-Sleeve Apparel	Endemis		Non Endemis		Total		Sig
	n	%	n	%	N	%	
Positive	24	38.7	46	73.0	70	56.0	0.000
Negative	38	61.3	17	27.0	55	44.0	
Total	62	100	63	100	125	100	

3.2 Multivariate Analysis

Multivariate analysis was conducted with the aim to find out any independent variables that can be predictors of dengue hemorrhagic fever. The analysis used logistic regression test with Enter method at significance level of 95%. The variables candidates in this logistic regression test were from Mann-Whitney and Fisher's Exact test with p <0,05.

From Table 10 shows that after regression test to see the most influential factor of environmental factor variable and effort to avoid mosquito bite it is found that the factor that significantly influence the endemicity status is the use of anti-mosquito drugs with p-value of 0.001 (0.001 <0 , 05). Based on the table also obtained the value of Exp. (B) = 8,092, meaning that areas where people do not use anti-mosquito medicines have a risk factor of 8.092 times to become endemic areas of DHF compared to areas where people use anti-mosquito drugs.

Table 10. Environmental Factor Analysis Results and Efforts to Avoid Mosquito Bites Against Endemicity in Rappocini Sub-district

Variable	B	Wald	Sig.	Exp(B)
Temperature	0.011	0.008	0.929	1.011
Humidity	-0.062	1.333	0.248	0.940
Lighting	0.137	4.035	0.045	1.146
existence of larvae	-0.105	0.025	0.873	0.900
Mosquito Net	0.616	1.545	0.214	1.852
Mosquito Repellent	2.091	10.757	0.001	8.092
Installation of Wire	0.945	3.463	0.063	2.573
Long-Sleeve Apparel.	1.490	8.399	0.004	4.435

3.3 Overall Discussion

The results of this study are in accordance with the results of research Muchlis [10], states that the habit of not using anti-mosquito drugs is a high risk factor for the incidence of DHF in the Work Area Pattingalloang Puskesmas Makassar City in 2011, with the value p = 0,000, OR of 4,800 which means patients who do not use anti-mosquito drugs have a risk of dengue disease by 4,800 times compared with those using anti-mosquito drugs. The results of Andriani's [11] study also found that the risk of non-mosquito repellent use with dengue virus infection in Semarang

was 5.6 times greater (OR = 5.6; 95% CI = 1.8 - 17.5). The use of anti-mosquito drugs is the most widely implemented effort by the community.

This is also in accordance with research conducted by Mahardika [12], states that there is a significant relationship between using anti-mosquito drugs with the incidence of Dengue Hemorrhagic Fever in the work area of Cepiring District Health Center Cepiring District Kendal in 2009. Odd Ratio (OR) = 6,000 (95% CI = 1,787-20,147), indicating that respondents who did not take anti-mosquito drugs had 6,000 times more risk of dengue than respondents taking anti-mosquito drugs.

The results of this study are in line with the results of research conducted by Sofia, et al [13] which states the relationship between air temperature with the incidence of DBD with the value of p = 0.003 and OR = 2.9 (95% CI = 1.5 - 5.7) which means that the risk for the occurrence of DBD in respondents who have an optimal home air temperature for the development of mosquitoes 2.9 times greater than the respondents whose air temperature in the house is less than optimal for the development of mosquitoes.

The results of this study are in accordance with research conducted by Sitorus [14], the results show that the air humidity has a significant relationship with the increase of dengue cases (p = 0.015). The results of this study in accordance with the results of research from Waluyo, et al [15] showed that there is a significant influence between the lighting on the case and endemicity of Dengue Hemorrhagic Fever in the District Benowo.

The results of this study, in line with a study conducted by Purba [16] which states that there are significant differences in the difference in larvae to endemicity levels with p = 0,000. The results of this study also in accordance with the results of research ever conducted by Hasanudin Ishak, et al (2009) whose research results stated that the density of larvae of HI: 47% and CI: 31.1% have a significant relationship with high low level endemicity.

The results of this study in accordance with research Muchlis [10] shows Chi-Square test results obtained value X2 = 0.6 and value p = 0.634. Because the value of p> α (0,05) and the value of OR = 1,660 hence which means that habit use mosquito net is risk factor to DHF incidence in working area of Puskesmas Pattingalloang Kota Makassar.

The results of this study are in accordance with the results of Andriani's research (2004), found that the risk of non-mosquito-using habits with dengue virus infection in Semarang as much as 5.6 times larger (OR = 5.6, 95% CI= 1.8 - 17.5).

Similarly, the research of Tamza,et al [17] concluded that the installation of wire netting in ventilation has a relationship with the occurrence of DHF (p = 0,038) OR = 4,753 (95% CI 1.206-18,738).

This result is also in line with research conducted by Muchlis [10] that those who do not wear long-sleeved clothing in endemic areas are 53 respondents (91.4%) and in non-endemic areas 48 respondents (82.8%) the relationship of DHF events with the habit of using long-sleeved shirts.

4. CONCLUSION

Based on the results of research on environmental factor analysis and community efforts to avoid mosquito bites against DHF endemicity, The results can be concluded as follow. Behavioral factor is the most significant factor difference between endemic areas DBD and non endemic DHF is the behavior of the use of anti-mosquito drugs, while the significant environmental factors the difference is lighting. Results showed that the temperature of non-endemic areas of DHF is higher than dengue endemic area which has the optimum temperature for mosquito growth. Also,that dengue humidity is higher and more optimum for the growth of mosquitoes compared to non-endemic areas of DHF. On the other hand, the lighting of non-endemic areas of DHF is higher than that of DHF endemic areas that have sufficiently dark illumination for mosquito growth. In addition, the presence of larvae in dengue endemic areas is more positive than the non-endemic areas of DHF. Results has also showed that the communities in dengue endemic areas and non-endemic areas of DHF have relatively low mobility. As for the mosquito net, result showed that people in non-endemic areas of DBD use mosquito nets more often than people in dengue endemic areas. Also, that people in non-endemic areas are more likely to use mosquito repellent drugs than people in dengue endemic areas. As for the wire usage, the people in non-endemic areas of DHF place more gauze wire on house ventilation than people in dengue endemic areas. Finally, the usage of long sleeve shirt showed that people in non-endemic areas of DHF use more long sleeve shirt than people in dengue endemic areas.

5. REFERENCES

[1] Kusriastuti, R. (2011). Modul Pengendalian Demam Berdarah Dengue. Jakarta: Kementerian Kesehatan RI.

[2] Kusriastuti, R. (2010). Data kasus DBD per bulan di Indonesia tahun 2010, 2009, dan tahun 2008. Jakarta: PPBB.

[3] Kemenkes, R. I. (2014). Situasi Demam Berdarah Dengue Di Indonesia. Jakarta: Pusat Data dan Informasi Kementerian Kesehatan Republik Indonesia.

[4] Makassar, D. K. K. (2012). Profil kesehatan kota Makassar. *Makasar: Dinkes Kota* Makasar.

[5] Ginanjar, G. (2008). Demam Berdarah. PT Mizan Publika.

[6] Waluyo, B., & Nurullita, U. (2011). Pengaruh Penggunaan Cahaya Buatan Terus Menerus Terhadap Perilaku Aedes aegypti Menghisap Darah. *Jurnal Kesehatan Masyarakat Indonesia*, *7*(1).

[7] Sucipto, C. D. (2011). Vektor Penyakit Tropis. *Yogyakarta: Gosyen Publishing*.

[8] Santoso, S., & Budiyanto, A. (2008). Hubungan Pengetahuan Sikap dan Perilaku (PSP) Masyarakat terhadap vektor DBD di Kota Palembang Provinsi Sumatera Selatan. *Jurnal Ekologi Kesehatan*, *7*(2 Agt).

[9] Notoatmodjo, S. (2005). Promosi kesehatan teori dan aplikasi. *Jakarta: Rineka Cipta*, 52-54.

[10] Muchlis, S., Ishak, H., & Ibrahim, E. (2014). Faktor Risiko Upaya Menghindari Gigitan Nyamuk Terhadap Kejadian Dbd Di Puskesmas Pattingalloang Makassar.

[11] Andriani, S. (2004). Perilaku Pencegahan Terhadap Gigitan Nyamuk Sebagai Faktor Risiko Terjadinya Infeksi Virus Dengue Di Kota Semarang (Studi Kasus Di Kota Semarang) (Doctoral Dissertation, Program Pascasarjana Universitas Diponegoro).

[12] Mahardika, W. (2009). Hubungan antara Perilaku Kesehatan dengan Kejadian Demam Berdarah Dengue (DBD) di Wilayah Kerja Puskesmas Cepiring Kecamatan Cepiring Kabupaten Kendal Tahun 2009 (Doctoral dissertation, Universitas Negeri Semarang).

[13] Sofia, S., Suhartono, S., & Wahyuningsih, N. E. (2014). Hubungan Kondisi Lingkungan Rumah dan Perilaku Keluarga dengan Kejadian Demam Berdarah Dengue Di Kabupaten Aceh Besar. *JURNAL KESEHATAN LINGKUNGAN INDONESIA*, *13*(1), 30-38.

[14] Sitorus, J. (2003). *Hubungan Iklim dengan Kasus Penyakit Demam Berdarah Dengue di* Kotamadya *Jakarta Timur tahun 1998-2002* (Doctoral dissertation, Tesis, Fakultas Kesehatan Masyarakat Universitas Indonesia).

[15] Waluyo, B., & Nurullita, U. (2011). Pengaruh Penggunaan Cahaya Buatan Terus Menerus Terhadap Perilaku Aedes aegypti Menghisap Darah. *Jurnal Kesehatan Masyarakat Indonesia*, *7*(1).

[16] Purba, D. (2012). Pengaruh Faktor Lingkungan Fisik dan Kebiasaan Keluarga terhadap Kejadian Demam Berdarah Dengue (DBD) di Kecamatan Binjai Timur Kota Binjai(Master's thesis).

[17] Tamza, R. B., & Suhartono, D. (2013). Hubungan faktor lingkungan dan perilaku dengan kejadian demam berdarah dengue (DBD) di wilayah kelurahan perumnas Way Halim Kota Bandar Lampung. *Jurnal Kesehatan Masyarakat*, *2*(2).

6._Analysis_of_the_Environmental_Factors_and_the_Efforts_of...

ORIGINALITY REPORT

%14	%9	%7	%4
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Nurul Hidayah, Dwi Rahmawati. "Bio-physicochemical markers of the Aedes aegypti breeding water in endemic and non-endemic area", International Journal of Public Health Science (IJPHS), 2019 Publication	%2
2	heanoti.com Internet Source	%1
3	garuda.ristekdikti.go.id Internet Source	%1
4	id.scribd.com Internet Source	%1
5	Edy Siswantoro, Nasrul Hadi Purwanto, Sutomo . "Effectiveness of Alkali Water Consumption to Reduce Blood Sugar Levels in Diabetes Mellitus Type 2", Journal of Diabetes Mellitus, 2017 Publication	%1
6	thesai.org Internet Source	%1

7	theses.gla.ac.uk Internet Source	%1
8	"Intervention “Cakram of Degenerative Disease” to Knowledge and Attitude of Employees Sriwijaya University", International Journal of Recent Technology and Engineering, 2019 Publication	%1
9	Lalu Muhammad Saleh, Tjipto Suwandi, Hamidah Hamidah. "The Correlation between Sex, Age, Educational Background, and Hours of Service on Vigilance Level of ATC Officers in Air Nav Surabaya, Indonesia", International Journal of Evaluation and Research in Education (IJERE), 2016 Publication	%1
10	lib.unnes.ac.id Internet Source	%1
11	Submitted to iGroup Student Paper	<%1
12	Submitted to Universitas Dian Nuswantoro Student Paper	<%1
13	ejournal.poltektegal.ac.id Internet Source	<%1
14	www.tandfonline.com Internet Source	<%1

15	"Proceedings of the Andalas International Public Health Conference 2017", BMC Public Health, 2017 Publication	<%1
16	Submitted to The University of the South Pacific Student Paper	<%1
17	lume.ufrgs.br Internet Source	<%1
18	www.scribd.com Internet Source	<%1
19	bikinflipchart.wordpress.com Internet Source	<%1
20	www.tealcedar.com Internet Source	<%1
21	Submitted to Mahidol University Student Paper	<%1
22	media.neliti.com Internet Source	<%1
23	www.esahq.org Internet Source	<%1
24	www.jco.org Internet Source	<%1
25	ejournal.undip.ac.id Internet Source	<%1

26	Novakovic, J., and A. Veljovic. "C-Support Vector Classification: Selection of kernel and parameters in medical diagnosis", 2011 IEEE 9th International Symposium on Intelligent Systems and Informatics, 2011. Publication	<%1
27	sinta.unud.ac.id Internet Source	<%1
28	Submitted to Defense University Student Paper	<%1
29	www.jikm.unsri.ac.id Internet Source	<%1
30	M A Mubarok, N E Wahyuningsih, D A Riani, R Putri, A Budiharjo. "The relationship between healthy hygiene behavior and dengue haemorrhagic fever (DHF) incidence in Semarang", Journal of Physics: Conference Series, 2018 Publication	<%1

EXCLUDE QUOTES	ON	EXCLUDE MATCHES	< 5 WORDS
EXCLUDE BIBLIOGRAPHY	ON		