http://ejournal.seaninstitute.or.id/index.php/healt
Jurnal eduhealth, Volume 14, No 01, 2023
E-ISSN. 2808-4608

Risk Factor Analysis Of Dengue Fever In Indonesia: Literature Review

Bambang Irawan [1], Zahratul Hayati[2]
[1,]Harapan Bunda Bima Midwifery Academy, [2]Surya Mandiri Bima Midwifery Academy

ARTICLE INFO

Keywords:
risk factors,
dengue hemorrhagic fever,
Indonesia,
Literature Review

Email :
bi2805168@gmail.com
zahratulhayati.fkmuh@gmail.com

ABSTRACT

Dengue Hemorrhagic Fever (DHF) is an acute infectious disease caused by the dengue virus. Based on WHO data, it is estimated that every year around 50-100 million people are indicated to be infected with the dengue virus. This study aims to determine the factors that can influence the increasing number of cases of Dengue Hemorrhagic Fever in Indonesia based on a literature review. This study used a descriptive method with a literature review approach. This study uses previous studies with the criteria of being indexed by Sinta 2, 3, 4 and 5 and the maximum publication time of the last 5 years. The results showed that there were several factors that caused the incidence of DHF, namely water reservoirs, garbage collection, the habit of hanging clothes, the use of mosquito repellents,

1. INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is an acute infectious disease caused by the dengue virus. This disease spreads through the bite of a female Aedes Aegypti mosquito which already contains the dengue virus in its body. Dengue Hemorrhagic Fever (DHF) can be found in almost every part of the world in both tropical and subtropical countries (Tansil et al, 2021).

Dengue Hemorrhagic Fever (DHF) infects almost all over the world, especially in Southeast Asia and Southeast America (Zulfa et al, 2021). Based on WHO data, it is estimated that every year around 50-100 million people are indicated to be infected with the dengue virus (Kemenkes RI, 2016). According to WHO, in 2004-2010, Asia Pacific had 75% burden of dengue hemorrhagic fever in the world. One of the countries that has the highest number of DHF cases is Indonesia, where Indonesia ranks second among 30 other DHF endemic countries (Kemenkes RI, 2019).

In 2020 the number of cases of Dengue Hemorrhagic Fever (DHF) reached 103,509 cases with a total of 725 deaths reported from 475 regencies/cities in 34 provinces with a DHF Incidence Rate (IR) of 40 per 100,000 population and a Case Fatality Rate (CFR) of 0.70%. The addition of the number of cases in 2021 was recorded as many as 212 new cases with as many as 5 cases of death caused by Dengue Hemorrhagic Fever (DHF). There are 13 provinces with the highest number of cases, covering parts of Sumatra, all of Java, parts of Sulawesi, Bali and Nusa Tenggara (RI Ministry of Health, 2021).

Risk factors that may affect the increasing number of DHF cases include the bionomics of mosquito vectors, weather and climate conditions; physical environment such as temperature, humidity, rainfall; biological environment such as the existence of mosquito larvae/vectors and the existence of breeding places and resting places; factors of community behavior, population density, and population mobility. Meanwhile, the distribution pattern of DHF can be influenced by several things, one of which is the presence of mosquito vectors which can be reviewed through entomological indices in the form of House Index (HI), Container Index (CI), Breteau Index (BI), and Larvae-Free Number (ABJ). The high transmission or spread of DHF is supported by the high density of Aedes aegypti mosquitoes (Maryanti et al, 2020 and Tansil et al, 2021).

2. METHODS

This study used a descriptive method with a literature review approach. This study uses previous studies with the criteria of being indexed by Sinta 2, 3, 4 and 5 and the maximum publication time of the last 5 years. The number of articles found using Google Scholar was 5,730 publications, but 10 articles met the predetermined criteria, where the articles related to risk factors for dengue hemorrhagic fever (DHF) in Indonesia. Table 1 below provides an overview of the articles that will be used in conducting a literature review that already meet the criteria.

Table. 1 Article used in the literature review.

No.	Author Name, Year of Publication, Title	Publisher	Findings in research
1	(Marina et al, 2020) Environmental Factors and Behavior for Eradicating Mosquito Nests on Dengue Hemorrhagic Fever Transmission Status in Mutikajaya District, Bekasi City	Vector Journal	This study shows that plant heights of more than five meters, uneven plant cover and evenly distributed vegetation, the frequency of cleaning water reservoirs, and the use of anti-mosquito drugs can influence the transmission of cases so as to increase the number of DHF cases in Mustikajaya District.
2	(Sinaga and Hartono, 2019) Determinants of the Incidence of Dengue Hemorrhagic Fever (DHF) in the Working Area of the Medan Johor Health Center	Journal of Global Health	This study shows that there is a relationship between the implementation of eradicating mosquito nests (PSN), the habit of hanging clothes and taking afternoon/afternoon naps with the incidence of DHF so that the number of DHF cases increases in the working area of the Medan Johor Health Center.
3	(Kusumawati and Sukendra, 2020) Spatiotemporal Dengue Hemorrhagic Fever based on House index, population density and house density	HIGEIA	This study shows a spatiotemporal picture of the incidence of dengue hemorrhagic fever based on the house index, population density and house density in the Kadipiro Sub-district. low.
4	(Zulfa et al, 2021) Factors Associated with the Incidence of Dengue Hemorrhagic Fever (DHF) in Highly Endemic Areas of Semarang City	Journal of Public Health Research (JRKM)	This study shows that there is a relationship between the variable level of knowledge and attitudes of respondents towards the increasing incidence of dengue hemorrhagic fever (DHF) in the city of Semarang.
5	(Tansil, Rampengan and Wilar, 2021) Risk Factors for Dengue Hemorrhagic Fever in Children	Biomedical Journal	This study shows that there is a relationship between nutritional status, age, presence of vectors, domicile, environment, breeding place, resting place, habit of hanging clothes, temperature, use of mosquito repellent, occupation, knowledge and attitudes, and 3M practices.
6	(Musmiler and Ermi, 2020) Phenomenological Study: Factors Affecting the Incidence of Dengue Hemorrhagic Fever AT Ambacang Padang Health Center	Journal of Nursing Science	This study shows that the participants have good knowledge related to dengue hemorrhagic fever. However, the attitudes and actions of the participants were not in line with their knowledge. This is evidenced by the negative attitude of the participants because they did not take any precautions before they were exposed to and experienced dengue fever. New participants took precautionary measures after experiencing dengue hemorrhagic fever.
7	(Sholihah, Weraman, Ratu, 2020) Spatial Analysis and Modeling of Risk Factors for Dengue Hemorrhagic Fever in 2016-2018 in Kupang City	Journal of Indonesian Public Health	This study shows that the host factors that influence the incidence of DHF in coastal areas are age, education, while work in hilly areas is age, sex, education and type of work. Environmental factors that affect coastal areas are density, banana tree spacing, use of

			mosquito repellents, PSN activities, while in hilly areas are humidity, banana tree spacing, use of mosquito repellents, PSN activities. Model risk factors that simultaneously influence the incidence of DHF in coastal areas are PSN activities, types of work while in hilly areas are age factors, and PSN activities.
8	(Mawaddah, Pramadita and Tejoyuwono, 2022) Analysis of the Relationship between Environmental Sanitation Conditions and Family Behavior with the Incidence of Dengue Hemorrhagic Fever in Pontianak City	Journal of Wetland Environmental Technology	This study shows that there are several factors that can influence the incidence of dengue hemorrhagic fever in Pontianak City, namely water reservoirs, disposal systems or waste management, the presence of mosquito larvae, the habit of hanging clothes and the use of mosquito repellents.
9	(Handayani, Raharjo and Joko, 2023) Effect of Entomology Index and Distribution of Dengue Hemorrhagic Fever Cases in Sukoharjo District	Indonesian Journal of Environmental Health	This study shows that there is a relationship between the house index, container index, breteau index and larvae-free rate for DHF cases. The spatial pattern of the distribution of DHF cases in Sukoharjo Regency in 2021 is a positive autocorrelation with a group pattern that has the highest case density in Grogol District.
10	(Octaviani, Kusuma and Wahyono, 2021) The Effect of Water Storage on DHF Incidence in West Bangka Regency in 2018	Disease Vector Journal	This study shows that there is a relationship between open water reservoirs, houses that are positive for larvae and houses that have a total of ≥ 6 water reservoirs.

3. RESULTS AND DISCUSSION

Based on the results of a literature search, several risk factors were found that could influence the incidence of dengue hemorrhagic fever (DHF) in Indonesia, namely as follows:

Water reservoirs

In accordance with research conducted by (Mawaddah, Pramadita and Tejoyuwono, 2022) shows that out of 54 respondents spread throughout Pontianak City, there are 17 respondents who have water reservoirs that do not meet the requirements so that after further analysis it shows that there is a relationship between water reservoirs and the incidence of DHF with an OR of 7.48 which means that respondents who have water reservoirs that do not meet the requirements are 7.84 times at risk of getting DHF compared to respondents who have water reservoirs that meet the requirements.

This research is in line with research conducted by (Octaviani, Kusuma and Wahyono, 2021) which states that there is a relationship between open water reservoirs and the incidence of DHF with an OR value of 2.723 which means that respondents who have open water reservoirs have a 2.723 risk of getting DHF. compared to respondents who have closed water reservoirs. This can also affect the number of water reservoirs with ≥ 6 water reservoirs with an OR value of 5.125, which means that respondents with ≥ 6 water reservoirs have a 5.125 times the risk of getting DHF compared to respondents whose houses have ≤ number of water reservoirs. 6.

Garbage Collection

According to research conducted by (Marina et al, 2020) it was found that there was a relationship between not having the habit of cleaning garbage shelters and the incidence of DHF which resulted in

an OR value of 2.9 which means that households that do not have the habit of cleaning garbage containers at least a week once has a 2.9 times greater risk compared to households that have a habit of cleaning the garbage collection site at least once a week. This research is in line with that conducted by (Mawaddah, Pramadita and Tejoyuwono, 2022) based on the statistical test Chi-Square test obtained P value = 0.029 <0.05 which means there is a link between the garbage disposal system and the incidence of DHF in Pontianak City in 2020, with an OR value of 4,

The Habit of Hanging Clothes

In the research conducted by (Sinaga and Hartono, 2019) it was shown that out of 25 people who hung clothes, the majority of respondents experienced DHF incidents as many as 16 people (66.0%) with the results of the chi square statistical test for the variable hanging clothes, the P value was < α (0.022 <0.05), which means that there is a relationship between hanging clothes and the incidence of DHF, with an OR value of 4.889 (95% CI 1.199-19.942) which means that people who have the habit of hanging clothes are 4.889 times more at risk of experiencing DHF than people who do not. have a habit of hanging clothes. This is in line with research conducted by (Tansil, Rampengan and Wilar,

According to (Mawaddah, Pramadita and Tejoyuwono, 2022) out of 54 respondents it showed that 17 respondents had the habit of hanging clothes so after a statistical test the Chi-Square test value showed that p = 0.029 > 0.05 which means there is a link between the habit of hanging clothes and The incidence of DHF in Pontianak City in 2020, with an OR value of 4.03, means that respondents who have the habit of hanging clothes at home have a 4.03 times risk of getting DHF compared to respondents whose homes do not practice the habit of hanging clothes.

Use of Anti Mosquito Drugs

Based on research conducted by (Marina et al, 2020) showed that there was a relationship between the use of mosquito repellents and the incidence of DHF which was indicated by an OR value of 2.33, which means that respondents who did not use mosquito repellents had a 2.33 greater risk infected with DHF compared to respondents who used anti-mosquito drugs. This is in line with research conducted by (Tansil, Rampengan and Wilar, 2021) which stated that respondents who did not use mosquito repellents had a 3.3 times greater risk of contracting DHF compared to respondents who used mosquito repellents.

According to research conducted by (Mawaddah, Pramadita and Tejoyuwono, 2022) out of 54 there were 21 respondents who did not have the habit of using mosquito repellents, where after conducting the Chi-Square test the results were P = 0.04 > 0.05, which means there is an association between the habit of using mosquito repellents and DHF transmission in Pontianak City in 2020, with a total OR of 3,769 which can be concluded that respondents who are not used to using mosquito repellents have a risk of 3,769 times being able to contract DHF compared to those who do habitually use mosquito repellents.

Environment

In accordance with research conducted by (Sholihah, Weraman, Ratu, 2020) shows that the coastal area is an area that has a 100% high risk of being a factor that influences the incidence of DHF, so it needs to be the focus of program evaluation and intervention. If you look at the cases in 2016 there were 10 cases, 2017 16 cases, and 2018 there were 49 cases. Whereas in hilly areas it should also be a concern in program evaluation for future case vigilance even though cases in the Naioni Health Center area are low, namely in 2016 there were 6 cases, in 2017 there were 8 cases and in 2018 there were 9 cases

Population density

In accordance with research conducted by (Kusumawati and Sukendra, 2020) shows that high population density and close proximity of houses can cause the spread of the dengue virus from one person to another around it more easily so that after conducting a spatial analysis it can be seen that there are areas that have DHF 58% have medium and 36% high density of houses.

This research is in line with research conducted by (Handayani, Raharjo and Joko, 2023) that the pattern of distribution of DHF cases in Sukoharjo Regency is clustered or grouped. Spatial autocorrelation in DHF cases in Sukoharjo Regency in 2021 has a positive spatial autocorrelation. Positive spatial autocorrelation means that the location of a village area that has DHF cases will have values that tend to be similar and in groups with adjacent village areas. Moran's index value is 0.51, i.e. I > 0 has a positive autocorrelation meaning so that the number of DHF cases in one village area is very similar to cases in adjacent villages so that population density greatly influences the increase in the number of DHF incidents in Sukoharjo district.

Knowledge

In accordance with research conducted by (Zulfa et al, 2021) based on the results of statistical tests it is known that there is a relationship between respondents' knowledge and DHF prevention measures so that it can increase the number of cases of DHF incidents. This is in line with research conducted by (Musmiler and Ermi, 2020) which states that someone with high knowledge and ability can make someone try to improve themselves. Lack of knowledge, makes a person unable to make an objective assessment. If it is related to someone's knowledge about dengue hemorrhagic fever, then someone who has good knowledge will be able to know how to avoid this disease. Or if someone already knows the signs and symptoms of dengue fever.

4. CONCLUSION

Dengue Hemorrhagic Fever (DHF) is an acute infectious disease caused by the dengue virus. There are several risk factors that can cause DHF in Indonesia, including the existence of water reservoirs that do not meet the requirements and the large number of water reservoirs so that there are water reservoirs that are not treated, there are trash containers but they rarely carry out maintenance, even if only once a week. , the habit of hanging clothes that are at risk of becoming a breeding ground for mosquitoes, the use of mosquito repellents, having an environment that supports the increasing number of DHF cases, population density and public knowledge about DHF.

REFERENCES

[1] Octaviani, Muhammad Putra Kusuma and Tri Yunis Miko Wahyono. 2021. The Effect of Water Storage on DHF Incidence in West Bangka Regency in 2018. http://ejournal2.litbang.kemkes.go.id/index.php/vectorp/article/view/3263/2309

[2] Fatin Mawaddah, Suci Pramadita and Agustina Arundina Tejoyuwono. 2022. Analysis of the Relationship between Environmental Sanitation Conditions and Family Behavior with the Incidence of Dengue Hemorrhagic Fever in Pontianak City. https://jurnal.untan.ac.id/index.php/jmtluntan/article/view/56379/pdf

[3] Maulina Tri Handayani, Mursid Raharjo and Tri Joko. 2023. The Effect of the Entomology Index and the Distribution of Dengue Hemorrhagic Fever Cases in Sukoharjo Regency. https://ejournal.undip.ac.id/index.php/jkli/article/view/47282

[4] Nur Arifatus Sholihah, Pius Weraman and Jacob M. Ratu, 2020. Spatial Analysis and Modeling of Risk Factors for Dengue Hemorrhagic Fever in 2016-2018 in Kupang City. https://core.ac.uk/download/pdf/327119082.pdf

[5] Marina et al. 2020. Environmental Factors and Behavior for Eradicating Mosquito Nests on Dengue Hemorrhagic Fever Transmission Status in Mutikajaya District, Bekasi City http://ejournal2.litbang.kemkes.go.id/index.php/vk/article/view/3141

[6] Erni Musmiler and Risa Meliarni Ermi. 2020. Phenomenological Study: Factors Influencing the Incidence of Dengue Hemorrhagic Fever at the Ambacang Padang Health Center. https://jurnal.stikes-alinsyirah.ac.id/keperawatan/article/view/561/134

[7] Zulfa et al. 2021. Factors Associated with the Incidence of Dengue Hemorrhagic Fever (DHF) in Highly Endemic Areas of Semarang City. https://ejournal2.undip.ac.id/index.php/jrkm/article/view/12220

[8] Melissa G. Tansil, Novie H. Rampengan and Rocky Wilar. 2021. Risk Factors for Dengue Hemorrhagic Fever in Children. https://ejournal.unsrat.ac.id/index.php/biomedik/index

[9] Pariono Sinaga and Hartono. 2019. Determinants of the Incidence of Dengue Hemorrhagic Fever (DHF) in the Work Area of the Medan Johor Health Center. http://ejournal.helvetia.ac.id/index.php/jkg/article/view/4411/272
[10] Nila Kusumawati and Dyah Mahendrasari Sukendra. 2020. Spatiotemporal Dengue Hemorrhagic Fever based on House index, population density and house density https://journal.unnes.ac.id/sju/index.php/higeia/article/view/32507/15894
[11] Indonesian Ministry of Health. Situation of Dengue Fever in Indonesia 2017. Journal of Vector Ecology 2018, 31:71-78.
[12] Republic of Indonesia Ministry of Health. (2019). Dengue hemorrhagic fever control module. Jakarta: Directorate General of P2PL.
[13] Republic of Indonesia Ministry of Health. (2021). Data on DHF Indonesia Jakarta: Directorate General of P2PL. https://p2pm.kemkes.go.id/storage/publikasi/media/file_1619447946.pdf