Ann PUBLISHER Journal of Community Services (Abdisci)
e-ISSN 3047-2431
p-ISSN 3047-3489

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DOI: https://doi.org/10.62885/abdisci.v2i11.707

ERADICATING MOSQUITOES THAT CAUSE DENGUE FEVER IN KEDUNGJAYA VILLAGE THROUGH FOGGING IN KEDUNGJAYA VILLAGE, KEDAWUNG SUB-DISTRICT, CIREBON DISTRICT

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Abstract

Background. Dengue hemorrhagic fever (DHF) is an infectious disease caused by the dengue virus and transmitted through the bite *of the Aedes aegypti* mosquito. The spread of this disease can cause outbreaks in various regions, including Kedungjaya Village, Kedawung Subdistrict, Cirebon Regency.

Aims. Effective handling of DHF requires continuous prevention efforts, one of which is through controlling the population of disease-causing mosquitoes.

Methods. One method used to reduce mosquito populations is fogging or spraying insecticides. This study aims to analyze the effectiveness of fogging in eradicating mosquitoes that cause DHF in Kedungjaya Village. The method used was fogging, spraying insecticides on areas that become mosquito breeding grounds.

Result. The results showed that fogging can significantly reduce mosquito populations, which in turn reduces the potential spread of DHF. To achieve optimal prevention, a comprehensive approach is needed, including educating the community on clean and healthy living behaviors and mosquito nest eradication efforts.

Conclusion. This study is expected to contribute to DHF control efforts in the area and serve as a model for other regions facing similar problems.

Implementation. Some suggestions that can be given to improve the effectiveness of DHF control in Kedungjaya Village

Keywords: Fogging, Aedes aegypti, Dengue Fever, Insecticides

INTRODUCTION

Dengue fever (DHF) is an infectious disease caused by the dengue virus and transmitted through the bite of the Aedes aegypti mosquito. This disease is a serious public health problem, especially in tropical and subtropical countries, including Indonesia. Based on data from the Ministry of Health of the Republic of Indonesia, DHF is still a major cause of high morbidity and mortality, especially in urban and rural areas with poor environmental sanitation. One of the affected areas is Kedungjaya Village, Kedawung Subdistrict, Cirebon District, which has experienced an increase in dengue cases in recent years.

The presence of the vector strongly influences the spread of dengue, the Aedes aegypti mosquito, which breeds in waterlogged places. The life of the Aedes aegypti mosquito is strongly influenced by the

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biological and physical environment. Biological environmental influences, such as water stored in containers for a long time, will usually contain pathogens and parasites that affect the growth of mosquito larvae. Physical influences include house layout, container type, altitude, and climate. Other influences include rain, which can cause humidity to rise and increase the number of breeding sites. Therefore, mosquito population control is essential in preventing the spread of this disease. One method often used in mosquito control is fogging, which is spraying insecticides with a fogger to kill adult mosquitoes flying in the air.

Fogging is an effective method to quickly reduce mosquito populations and can be done promptly. However, despite its popularity, its effectiveness often depends on many factors, such as the timing of implementation, the type of insecticide used, and local environmental conditions. Therefore, it is essential to research the effectiveness of fogging in eradicating dengue-causing mosquitoes in specific areas. Kedungjaya Village, which frequently experiences dengue outbreaks, needs the right approach to controlling the spread of this disease. Implementing a scheduled fogging method and involving the active participation of the community is expected to reduce the incidence of dengue fever. DHF in this village. This study aims to evaluate the effectiveness of fogging in eradicating dengue-causing mosquitoes in Kedungjaya Village, Kedawung Sub-district, Cirebon District, and provide recommendations for more optimal control efforts.

METHODS

This study used an experimental method to evaluate the effectiveness of fogging in eradicating mosquitoes that cause Dengue Fever (DHF) in Kedungjaya Village, Kedawung District, Cirebon Regency. The method applied in this study consisted of preparation stages, fogging implementation, and evaluation of results after the fogging intervention was carried out. This activity was evaluated by making observations, especially in Hamlets I and II of Kedungjaya Village, whether after the implementation of fogging, the area was free of adult mosquitoes and Aedes aegypti larvae, and asking the local community whether, after fogging, there were still cases of dengue fever patients.

Type of Research

This descriptive study with a quantitative approach aims to measure changes in mosquito populations before and after fogging in Kedungjaya Village.

Location and Time of Research

This study was conducted for one month, from February 1 to February 31, 2025, in Kedungjaya Village, Kedawung Subdistrict, Cirebon Regency, an area with high Dengue Fever cases.

Population and Sample

The population of this study was the entire area of Kedungjaya Village, which was indicated as a breeding ground for Aedes aegypti mosquitoes. Based on previous survey data, samples were taken from several locations in the village that have been known to have high mosquito infestation levels. Each sample location will be observed under two conditions: before and after fogging.

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Data Collection Technique

Data collection was carried out through several stages as follows:

- **Initial Survey**: In the initial stage, a survey was conducted to map the breeding points of the Aedes aegypti mosquito, as well as identify locations that have a high risk of dengue outbreaks.
- **Mosquito Population Measurement**: Prior to fogging, mosquito population was measured at each location point using the **Indoor Resting Collection** (IRC) technique using mosquito collection

  devices placed in several houses and public facilities.
- **Fogging Implementation**: Fogging is conducted in the mapped locations using fogger and insecticides that comply with health standards. Fogging is conducted in the morning and evening to ensure that active adult mosquitoes can be reached by spraying.
- **Post-Fogging Mosquito Population Measurement**: After fogging, the mosquito population is measured again using the same method to determine the reduction in mosquito numbers that can occur.
- **Community Interviews**: In addition to mosquito population measurements, interviews were conducted with local communities regarding their understanding of the importance of mosquito eradication and their participation in dengue control efforts.

Tools and Materials

- **Tools**: Fogger (fogging sprayer), indoor resting collection, thermometer and humidity meter to measure environmental conditions.
- **Materials**: Insecticides that comply with health standards, personal protection for personnel (masks, body armor, and gloves).

Data Analysis

The data obtained will be analyzed quantitatively by comparing the number of mosquitoes trapped before and after fogging. The reduction in mosquito population is calculated as a percentage to determine the effectiveness of fogging. addition, interview data will be analyzed qualitatively to describe community understanding and participation in dengue control efforts.

Research Ethics

This research was conducted with ethical principles in mind, by obtaining permission

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from the authorities at the village and sub-district levels, and ensuring that the communities involved in the research were given an explanation of the purpose of the research and informed consent.

DISCUSSION

Research Results

This study was conducted to assess the effectiveness of fogging in reducing the mosquito population that causes dengue fever in Kedungjaya Village, Kedawung Sub-district, Cirebon District. Data. The data collected consisted of mosquito population counts before and after fogging and community responses to the fogging.

Mosquito Population Before and After Fogging

Based on the results of mosquito population measurements at the 2 sample locations, the following data were obtained:

- **Before fogging**, the average number of Aedes aegypti mosquitoes trapped at each location point was 50 per location.
- **After fogging**, the number of mosquitoes trapped at the same spot decreased to about 15 per location.

Overall, the mosquito population decreased by 70% after fogging. This significant decrease indicates that fogging can reduce the number of adult mosquitoes that can potentially transmit the dengue virus.

Community Interview

Interviews with local communities showed that 85% of respondents stated that they were aware of the benefits of fogging in reducing the number of mosquitoes. However, only 60% actively participated in other mosquito control activities, such as eradicating mosquito nests around their homes. The majority of the community expressed that they felt safer after the fogging and hoped that this activity could be carried out regularly to be free from the dengue virus.

DISCUSSION

This study showed that the implementation of fogging in Kedungjaya Village effectively reduced the population of Aedes aegypti mosquitoes that could cause dengue. The significant reduction in the number of mosquitoes (70%) after fogging suggests this method can help reduce the risk of dengue virus spread in the area. Fogging works by killing adult mosquitoes exposed to insecticides sprayed through a fogger. It is effective in controlling adult

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mosquitoes, but does not affect mosquito eggs and larvae that are still present in breeding sites. The effectiveness of fogging can be affected by various factors, such as the time of implementation, the type of insecticide used, and environmental conditions that support mosquito development. This study used fogging in the morning and evening, when adult mosquitoes are more active. Choosing the right time is crucial so insecticides can reach the target more effectively. In addition, the selection of appropriate insecticides also affects the fogging results. In this study, the types of insecticides used proved effective in reducing the mosquito population.

While fogging can quickly reduce adult mosquito populations, this method has limitations. Fogging cannot kill mosquito eggs or larvae that are still in nests or in stagnant water. Therefore, fogging must be combined with mosquito nest eradication activities such as draining, covering, and burying potential breeding sites to achieve more comprehensive control. The combination of fogging and PSN will be more effective in reducing the number of dengue cases in the future. In addition, the community needs to be educated on the importance of maintaining environmental cleanliness and conducting PSN around the house. Based on the interview results, although most of the community knows about fogging, only a few are active in other prevention activities. Therefore, the active participation of the community is critical to support the sustainable prevention and control of DHF.

Recommendation

Based on the results of the study, it is recommended that:

1. Fogging is conducted regularly and regularly to ensure optimal control of adult mosquitoes.
2. The community is more actively involved in mosquito nest eradication and education on the importance of keeping the environment clean.
3. Long-term monitoring was conducted to measure the effectiveness of fogging and its effect on reducing dengue cases in Kedungjaya Village.
4. To maximize dengue prevention, fogging should continue to be combined with other approaches, such as larvicides and PSN.

CONCLUSIONS

1. Research on the effectiveness of fogging in eradicating mosquitoes that cause dengue fever in Kedungjaya Village, Kedawung Subdistrict, Cirebon Regency, showed that the fogging method can significantly reduce the population of Aedes aegypti mosquitoes. Based on the measurement results,

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there was a 70% reduction in the mosquito population after fogging. This shows that fogging is an effective method to control the number of adult mosquitoes that potentially transmit the dengue virus.

2. However, fogging's effectiveness cannot last long if it is not accompanied by continuous efforts to eradicate mosquito nests (PSN). In addition, active community participation in maintaining environmental cleanliness and conducting PSN is essential to support overall dengue control.

Implementation

Based on the research results, some suggestions that can be given to improve the effectiveness of DHF control in Kedungjaya Village are as follows:

1. Increased Fogging Implementation: Fogging should be conducted regularly and scheduled, especially in areas with high dengue case rates. Scheduling fogging in the morning and evening can also increase its effectiveness when adult mosquitoes are more active.
2. Mosquito Nest Eradication (PSN): To support the effectiveness of fogging, the community needs to be active in PSN activities, such as draining and closing water reservoirs and disposing of mosquito nests. items that can become mosquito nests. Mosquito nest eradication should be carried out on an ongoing basis at the household level.
3. Community Education: It is essential to conduct intensive socialization with the community to maintain environmental hygiene and dengue prevention efforts. Education on how to identify mosquito nests and the importance of carrying out PSN in their own homes needs to be strengthened.
4. Periodic Monitoring and Evaluation: Periodic monitoring and evaluation of the implementation of fogging and mosquito nest eradication efforts are required. This is to determine the long-term effectiveness of the implemented methods and adjust strategies if necessary.
5. Collaboration with Related Parties: The village government, health department, and community must collaborate to address the dengue problem holistically. This collaboration can create a healthier environment and avoid dengue outbreaks.

ACKNOWLEDGMENTS

We would like to thank the Kedungjaya Village Government, Kedawung Subdistrict, Cirebon District, for granting permission and fully supporting the implementation of this study. We would also like to thank the Cirebon District Health Office for providing the technical guidance and facilities needed for this research.

We would also like to thank the entire community of Kedungjaya Village for actively participating in mosquito eradication activities and providing valuable information during the research process. Community participation and awareness greatly supported the success of this study.

DOI: https://doi.org/10.62885/abdisci.v2i11.707

Our thanks also go to the Research Team and Research Assistants who have worked hard in data collection, analysis, and preparation of this research report.
Finally, thank you to all those who have supported this research, either directly or indirectly. Hopefully, this research can benefit efforts to control Dengue Fever in Kedungjaya Village and can be implemented for the prevention of dengue hemorrhagic fever in other areas.

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