

# Increasing Public Awareness on the Prevention of Dengue Hemorrhagic Fever through the Utilization of Used Cooking Oil into Lavender Aromatherapy Candles in Krompaan Village

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## Increasing Public Awareness on the Prevention of Dengue Hemorrhagic Fever through the Utilization of Used Cooking Oil into Lavender Aromatherapy Candles in Krompaan Village

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<sup>10</sup>  
**Abstract.** Dengue Hemorrhagic Fever or known as DBD disease which is caused by a dengue virus caused by the *Aedes Aegypti* mosquito. The disease causes sufferers to experience severe pain, complications, and death. The UIN Walisongo KKN Team conducted community service activities in Krompaan Village with the aim of increasing public awareness and participation in preventing Dengue Hemorrhagic Fever (DBD). Considering that this village is located near a river, which has the potential to be a habitat for the *Aedes Aegypti* mosquito, effective prevention efforts are needed to prevent this disease, which is one of the infectious diseases that is still endemic in Indonesia. The spread of this disease is influenced by mobility and environmental conditions that support the breeding of the *Aedes Aegypti* mosquito. The community service team focused on three main objectives in this activity by providing education about the dangers of DBD, teaching how to prevent the spread of mosquitoes, and using aromatherapy candles to prevent mosquitoes. The purpose of the counseling is to reduce diseases caused by mosquitoes by teaching the community about how to live a healthy life. Used cooking oil processed into aromatherapy candles is one of the new innovations in preventing DBD. This method is considered practical and easy to implement by the community by utilizing materials available around them.

**Keywords:** Dengue Fever, *Aedes Aegypti* Mosquitoes, Aromatherapy Candles, Used Cooking Oil.

<sup>10</sup>  
**Abstrak.** Demam Berdarah Dengue atau dikenal dengan penyakit DBD yang mana disebabkan oleh suatu virus dengue Judul Pengabdian Kepada Masyarakat 2 2 Name Journal VOLUME X, NO. X, BULAN 20XX dengan penyebab nyamuk *Aedes Aegypti*. Penyakit tersebut menjadikan penderitanya mengalami sakit nyeri kuat, komplikasi, berujung kematian. Tim KKN UIN Walisongo melakukan kegiatan pengabdian masyarakat di Desa Krompaan dengan tujuan meningkatkan kesadaran dan partisipasi masyarakat dalam pencegahan penyakit Demam Berdarah Dengue (DBD). Mengingat desa ini terletak di dekat sungai, yang berpotensi menjadi habitat nyamuk *Aedes Aegypti*, diperlukan upaya pencegahan yang efektif untuk mencegah penyakit ini, yang merupakan salah satu penyakit menular yang masih endemik di Indonesia. Penyebaran penyakit ini dipengaruhi oleh mobilitas dan kondisi lingkungan yang mendukung perkembangbiakan nyamuk *Aedes Aegypti*. Tim pengabdian berfokus pada tiga tujuan utama dalam kegiatan ini dengan cara memberi edukasi tentang bahaya DBD, mengajarkan cara untuk mencegah penyebaran nyamuk, dan menggunakan lilin aromatherapy untuk mencegah nyamuk. Tujuan penyuluhan adalah untuk mengurangi penyakit yang disebabkan oleh nyamuk dengan mengajarkan masyarakat tentang cara hidup sehat. Minyak jelantah yang diolah menjadi lilin aromaterapi adalah salah satu inovasi baru pencegahan DBD. Metode ini dianggap praktis dan mudah diterapkan oleh masyarakat dengan memanfaatkan bahan-bahan yang ada di sekitar mereka.

**Kata kunci:** DBD, Nyamuk *Aedes Aegypti*, Lilin Aromatherapy, Minyak Jelantah

### BACKGROUND

Dengue Hemorrhagic Fever (DHF) is an infectious disease caused by the Dengue virus and transmitted through mosquito vectors of the species *Aedes aegypti* or *Aedes albopictus*. The role of vectors in the spread of the disease causes many cases to be found in the rainy season, when many puddles appear that become mosquito breeding grounds. In addition to climate and environmental conditions, several studies show that dengue is related to mobility

and population density, as well as people's behavior. In Indonesia, dengue hemorrhagic fever (DHF) is still a serious public health problem. Dengue infection has been endemic in Indonesia for the past two centuries. This disease is *self limiting* however, in recent years it has shown increasingly severe clinical manifestations as dengue fever and the frequency of unusual events has increased.

The epidemiological pattern of dengue infection has changed from year to year, the number of cases peaks every 10-year cycle, especially in the Central Java Province of Kendal Regency dengue cases have increased more, Citing news from Radar Pekalongan Baca Koran, Dengue Hemorrhagic Fever (DHF) attack cases are going crazy in Kendal Regency. In 2024 until July 22, the findings have reached 660 cases, of which 23 have died. According to data from the Infectious Disease Control Division of the Kendal Regency Health Office (Dinkes), the popularity of dengue fever in the area shows a significant increase in cases in the last 20 years. In 2022, for example, the Health Office recorded 457 cases of dengue with 29 deaths. In 2023, although the number of findings has decreased, namely 375 cases, the number of deaths is the same, 29 cases. The increase in cases will occur significantly in 2024. In fact, it was only until July 22 that the findings reached 660 cases, of which 23 of them died from the Pekalongan Radar In Central Java Province itself, dengue cases were the highest.

Until now, dengue fever is still a health problem for the community and has a social and economic impact. The social losses that occurred included causing panic in the family, the death of family members and a decrease in life expectancy in the family, the death of family members and a decrease in the life expectancy of the community. The direct economic impact is the cost of treatment which is quite expensive, while the indirect impact is the loss of working time and other costs incurred in addition to treatment such as transportation and accommodation during sick treatment. Considering that a drug to kill the Dengue virus has not been found so far and a vaccine to prevent dengue is still in the trial stage, the way that can be done until now is to eradicate infectious mosquitoes (vectors). The eradication of this vector can be carried out while it is still in the form of larvae or adult mosquitoes so that education about dengue hemorrhagic fever is carried out.

In addition to the precautions that have been mentioned, the management of household waste such as used cooking oil is also a concern. Used cooking oil, if disposed of carelessly, can pollute the environment and become a breeding ground for mosquitoes. Therefore, the use of used cooking oil as a raw material for making aromatherapy candles with lavender scent is an innovation that is not only environmentally friendly but also effective in repelling mosquitoes (Julinar, et al., 2023). Lavender has been known as one of the plants with the

property of repelling insects, including mosquitoes. By combining used cooking oil and lavender essential oil, aromatherapy candles are produced that have a dual function: reducing waste and being a natural alternative to prevent the breeding of *Aedes aegypti* mosquitoes. The use of this candle also supports community empowerment by teaching new skills that are economically and environmentally beneficial (Hutagalung, 2022). Thus, the socialization and training program carried out in Krompaan Village not only focuses on education about dengue, but also on empowering the community to process waste into useful products. It is hoped that the community can independently prevent dengue while maintaining the cleanliness of the surrounding environment.

## METHODS

The socialization of dengue fever prevention was carried out on August 1, 2024 at the Krompaan Village Hall. The target of the socialization activity is PKK women and residents of Krompaan Village. The initial stage of holding this socialization is the implementation of the work program from the health and environment division by the UIN Walisongo KKN team and collaboration with the Gemuh 2 Health Center, considering that dengue fever is still a health problem in Kendal Regency. This needs attention from the Kendal Regency Health Office because the dengue fever death rate in Kendal Regency is the highest at the national level. The next stage is to prepare all the ingredients used to make Lavender aromatherapy candles for the prevention of dengue fever mosquitoes. The implementation of making aromatherapy candles is carried out by spreading pamphlets and then interspersed with the practice of making them guided by the UIN Walisongo KKN team.

The community education was carried out to provide knowledge about the processing of used cooking oil which becomes waste so that it can be used as mosquito repellent aroma therapy candles. The team conducted education on how to process used cooking oil which requires ingredients as delivered; used cooking oil, *stearic acid*, activated charcoal, *fragrance oil*, dye (if needed). The tools needed include: pots, candle containers, thread ropes, *ice cream sticks*. As for the procedure for how to make aromatherapy candles, prepare materials and tools; soak used cooking oil with activated charcoal for a day and a night; after the used cooking oil is clear and it is felt that no bad smell appears; furthermore, it can be boiled until boiling and mixed with *stearic acid* until it blends with used cooking oil; then it can be mixed with *fragrance oil* also dyes; Prepare a container of candles, candle wicks, and ice cream sticks until pour in used cooking oil mixed with *fragrance oil* and dyes; wait for the wax to freeze and dry.

Furthermore, assistance was carried out which with PKK mothers was used for question and answer sessions as well as discussion sessions on the use of used cooking oil to prevent dengue fever

mosquitoes available in the community, later it can be used as an alternative treatment prevention. The implementation of the activity was attended by PKK cadres of Krompaan Village with a total of 35 participants.



**Figure 1.** Implementation of Socialization

## RESULTS AND DISCUSSION

The implementation of socialization is an effort to educate the community, regarding dengue fever counseling in the Krompaan Village area. Before the socialization activities, the KKN team had made preparations such as conducting a literature study regarding the material that would be presented by the resource persons as well as how to make scented candles *Therapy*; preparing materials and supporting media tools for training and socialization for the material to be delivered; a discussion was held on the determination of the date and time of the implementation of socialization activities with resource persons; compiling topics that will be presented in socialization; conducting an experimental simulation of making mosquito repellent media that will be socialized.

The activities were carried out as there was a socialization of counseling related to the material for 45 minutes and training practices for making scented candles *Therapy* which is done for 30 minutes, of course by simulating the manufacturing experiment first on the previous day. The socialization that has been running has succeeded in achieving the target of success indicators set with the presence of as many as 30 people from the PKK Krompaan Working Group as well as representatives of mothers from both rw and rt. The activity was carried out at the Krompaan Village Hall, Gemuh District, Kendal Regency. Of course, in this socialization activity, material was also delivered on how to check mosquito larvae found in each house. The media used by the presenter with *power point* also the broadcast of educational videos. In addition to socializing the material, the KKN team also distributed pamphlets which contained the use of used cooking oil processed into aromatic candles *therapy* to the PKK's

mother.

In general, the public knows that the factor that causes dengue fever is mosquitoes *Aedes Aegypti*. And I understand that one of the efforts to avoid mosquito breeding is to drain water places that need to be done regularly, at least once a week so that mosquitoes cannot breed in that place. The first material given was about dengue disease, symptoms and actions that need to be taken. Dengue fever symptoms are often mistaken for symptoms of other diseases that also experience fever. This is because there are some symptoms that are similar to several other diseases, such as the flu or viral and bacterial infections. If not treated immediately, dengue fever can be fatal. Mild dengue fever can cause high fever, rash, muscle and joint pain. Meanwhile, severe dengue fever, also known as dengue (Arneliwati, 2022)(Frida, 2019)hemorrhagic fever, can cause serious bleeding, a sudden drastic drop in blood pressure and can even lead to death.(Pusat Data KEMENKES RI, 2017)

In the socialization activity, explain the meaning of dengue, the causes of dengue, the way of transmission, the characteristics of mosquitoes *Aedes Aegypti*, fever phase if you have been affected by dengue, and a breeding ground for mosquitoes. Prevention of dengue fever can be done through PSN 3M Plus, which is draining, closing, and recycling water reservoirs. Meanwhile, prevention plus can be in the form of applying larvicide, raising fish, repelling mosquitoes by using mosquito repellent, using mosquito nets, wearing long-sleeved clothes, applying mosquito repellent lotion, and spraying the room with mosquito repellent. The importance of urgency to prevent and act with preventive measures which is to foster awareness in the community of efforts to eliminate dengue disease factors which can be caused by oneself who are not aware of the importance of cleanliness and environmental maintenance.(Said Rio, 2023)(Athtahirah, 2024)

Efforts to anticipate the spread of dengue fever mosquitoes from the Gemuh 2 Health Center eradicate mosquito nests and kill mosquito larvae by distributing Abate drugs. Previously, of course, a check had been carried out on the residents' bathroom tub where there were mosquito larvae. Abate is an insecticide that is said to be effective if carried out according to the procedure contained in the package. If the placement of Abate is not suitable for the use of water, later the water will emit an unpleasant odor and can potentially cause nausea. The main cause of the spread of dengue fever mosquitoes is a location that stores open water floats, and mosquitoes are more free to breed. This needs to be eradicated by providing abate powder to kill the mosquito larvae because it has the potential to pose a threat of dengue fever for residents.(Yulidar, 2014)

Other efforts are made by ensuring that if there are people who get symptoms in the form

of fever that is more than three days old, they should be examined immediately and quickly for treatment to prevent something undesirable. Gajala dengue itself when it first feels pain does not look as severe because it is just like a normal fever until the patient can recover again, but can feel the symptoms again by getting worse until the joints and bones feel like they are broken, this condition can potentially lead to complications and lead to death. As reported in the Medcom.id in the news on May 6, 2024, stated that there were 341 dengue problems which caused 17 deaths. The initial symptoms were only fever and fever for two days and were treated with referrals. The Head of Disease Prevention and Control of the Kendal Regency Health Office said that due to the location of different hot and cold areas, it caused the two most dengue problems.(Said Rio, 2023)(Wahyudi, MetroTV, 2024)

Community service activities which are carried out have of course previously been analyzed according to the needs and concerns in the community. The activities carried out will not run well if there is no participation from the community itself. As said by Salam (2010) where when a person is going to participate in an activity or participate, it is considered important for a change by involving the community optimally to deliberate and consensus to combat preventive efforts that will occur. The following will be explained as detailed steps taken:

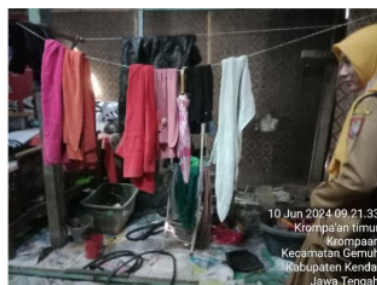


Figure 1. Survey of residential houses in Krompaan Village

The survey of community houses which has the purpose of finding out the condition and checking the presence of mosquito larvae that are nests of diseases also provides education about the dangers of dengue fever *door-to-door* which is carried out directly by the Gemuh 2 Health Center.



Figure 2. Presentation of socialization material by the Gemuh 2 Health Center

The next effort is to carry out socialization with the Gemuh 2 Health Center and collaborate with the KKN TEAM MIT UIN Walisongo Post 63 in Krompaan Village. The socialization material presented about the dangers of *Aedes Aegypti* mosquitoes is also an effort to take preventive steps that the community itself can take in the 3M way.



Figure 3. Learning together with PKK women to make Candle Aromatherapy

It is shown as the activity of making *aromatherapy candles* from used cooking oil with the women of the Krompaan PKK, at this stage the waste material of household used cooking oil is processed into *aromatherapy candles* and can be used in the environment so that it will reduce waste in the community as well as efforts to repel mosquitoes. In this activity, assistance was carried out to process used cooking oil from the beginning of oil purification to filtration and into *aroma therapy candles*.





Figure 4. Group photo with participants and resource persons as well as the UIN Walisongo KKN team

The community service program carried out by the UIN Walisongo KKN team can be said to be running smoothly also in accordance with the specified time. The service program was carried out for 1 day and the distribution of Abate drugs was carried out for 1 week. The activity was carried out previously by conducting a survey of residential houses. Followed by a trial training on making aromatherapy candles. Furthermore, with direct socialization with the Gemuh 2 Health Center, it was closed with the manufacture of aromatherapy candles which were directly fostered by the UIN Walisongo KKN team.

## CONCLUSIONS

The number of dengue hemorrhagic fever (DHF) cases has increased rapidly in recent years in Kendal Regency, Central Java. It is still a major threat to public health. In Krompaan Village, the UIN Walisongo KKN team in collaboration with the Gemuh 2 Health Center conducted a socialization and education program. The goal is to increase public awareness about the dangers of dengue fever and the importance of its prevention. This socialization includes education about dengue disease, how it is transmitted, symptoms, and prevention methods through the 3M Plus program. In addition, the innovation of using used cooking oil as an environmentally friendly lavender aromatherapy candle was also introduced as an effort to prevent dengue as well as empower the community. This activity managed to achieve the target with good attendance and positive responses from participants. In conclusion, continuous education and innovation in environmental management are very important to reduce the risk of dengue fever, as well as encourage active community participation in maintaining environmental cleanliness. Therefore, continuous education must be carried out in a structured and routine manner, while innovations in environmental prevention and management methods need to continue to be developed and applied. With a consistent and innovative approach, dengue prevention efforts in the krompaan village community can be more effective, sustainable, and produce a significant impact in reducing dengue cases.

The conclusion of the efforts made in Krompaan Village by the UIN Walisongo KKN team and the Gemuh 2 Health Center shows that education and innovation play an important role in reducing the risk of dengue hemorrhagic fever (DHF). The increasing number of dengue cases in Kendal Regency, Central Java, indicates that this threat is still very relevant for public health. Through socialization that includes information about dengue disease, ways of transmission, symptoms, and prevention methods of 3M Plus, public awareness can be increased. In addition, innovations in the form of the use of used cooking oil as lavender aromatherapy candles offer environmentally friendly solutions and provide added value for community empowerment. The results of this activity show that an educational and innovative approach can effectively increase the active participation of the community in the prevention of dengue, especially in maintaining the cleanliness of their environment. Therefore, continuous education and the development of environmental innovations must continue to be encouraged to strengthen dengue prevention efforts in the community.

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