

Edukasi Penggunaan Obat yang Aman saat Berpuasa: Meningkatkan Kesadaran Masyarakat di Desa Binaan Fakultas Farmasi dan Sains UHAMKA

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Abstract

Fasting during Ramadan is an obligatory act of worship for Muslims, but for individuals with certain health conditions, fasting while undergoing drug therapy can be confusing. This community service activity (PKM) aims to provide education to the community on the correct way to consume drugs while fasting. This activity was carried out in the Foster Village of the Faculty of Pharmacy and Science UHAMKA, Bintara RT 007, Bekasi City, West Java. This activity involved three pharmacists as speakers. The methods used for implementing community service activities include lectures, question and answer sessions, and interactive discussions. The results of community service from the activity showed a significant increase in community knowledge about the correct use of drugs during fasting. This PKM is expected to increase public awareness and understanding of the correct use of drugs, so that they can carry out fasting more optimally and safely.

Keywords: education, assisted village, medicine, fasting.

Abstrak

Puasa Ramadhan merupakan ibadah yang diwajibkan bagi umat Islam, namun bagi individu dengan kondisi kesehatan tertentu, berpuasa sambil menjalani terapi obat dapat menimbulkan kebingungan. Kegiatan pengabdian kepada masyarakat (PKM) ini bertujuan untuk memberikan edukasi kepada masyarakat mengenai cara yang tepat dalam mengonsumsi obat saat berpuasa. Kegiatan ini dilaksanakan di Desa Binaan Fakultas Farmasi dan Sains UHAMKA, Bintara RT 007, Kota Bekasi, Jawa Barat. Kegiatan ini melibatkan tiga apoteker sebagai pemateri. Metode pelaksanaan kegiatan pengabdian masyarakat yang digunakan mencakup ceramah, sesi tanya jawab, dan diskusi interaktif. Hasil pengabdian masyarakat dari kegiatan menunjukkan peningkatan signifikan dalam pengetahuan masyarakat tentang penggunaan obat yang tepat selama puasa. PKM ini diharapkan dapat meningkatkan kesadaran dan pemahaman masyarakat mengenai penggunaan obat yang benar, sehingga mereka dapat melaksanakan ibadah puasa dengan lebih optimal dan aman.

Katakunci: Edukasi, desa binaan, obat, puasa

PENDAHULUAN

Puasa Ramadhan merupakan salah satu ibadah yang mempunyai makna mendalam bagi umat Islam di seluruh dunia. Selama bulan suci ini, umat Islam diwajibkan menahan diri dari makan dan minum sejak terbit fajar hingga terbenamnya matahari. Meskipun puasa memiliki banyak manfaat spiritual dan kesehatan, bagi sebagian individu, terutama mereka yang memiliki kondisi medis tertentu, melaksanakan puasa sambil menjalani terapi obat dapat menjadi tantangan yang signifikan (Beshyah et al. 2019). Menurut data dari Riset Kesehatan Dasar (Riskesda) tahun 2018, jumlah penduduk Indonesia memiliki penyakit kronis, seperti diabetes, hipertensi, penyakit jantung, dan penyakit menular masih cukup tinggi (Kementerian Kesehatan RI 2018). Proporsi ini diperkirakan akan

terus meningkat di masa depan. Hal ini tentunya menjadi perhatian serius, mengingat penyakit kronis tersebut membutuhkan konsumsi obat secara rutin, termasuk saat berpuasa. Untuk mencapai pelayanan kesehatan yang terbaik, perlu dilakukan pendidikan kesehatan dengan menyebarluaskan informasi dan menanamkan rasa percaya diri, agar masyarakat tidak hanya sadar, tahu dan mengerti tetapi juga dapat melakukan tindakan kesehatan (Notoatmodjo 2012). Penelitian terdahulu menunjukkan bahwa kurangnya pemahaman masyarakat tentang cara yang tepat dalam mengkonsumsi obat saat berpuasa dapat berakibat pada kebingungan dan keterlambatan dalam pengobatan, yang dapat menyebabkan dampak negatif pada kesehatan (Yuliasuti, Lutfiyati, and Dianita 2017). Di beberapa daerah, termasuk desa-desa dalam konteks pengabdian masyarakat, informasi mengenai pengelolaan obat sering kali tidak mencukupi, sehingga masyarakat mengandalkan pengobatan sendiri tanpa bimbingan yang tepat (Haughtigan et al. 2023). Dengan mempertimbangkan permasalahan tersebut, kegiatan Pengabdian kepada Masyarakat (PKM) ini dirancang untuk memberikan edukasi yang komprehensif mengenai penggunaan obat yang tepat saat berpuasa. Kegiatan ini berfokus pada peningkatan pengetahuan masyarakat di Desa Binaan FFS Universitas Muhammadiyah Prof Dr. Hamka, Bintara RT 007, Kota Bekasi. Diharapkan, setelah mengikuti kegiatan ini masyarakat dapat berpuasa dengan lebih baik tanpa mengabaikan kebutuhan pengobatan mereka.

METODE PELAKSANAAN

Kegiatan Pengabdian Kepada Masyarakat (PKM) “Edukasi Penggunaan Obat Saat Berpuasa” dilaksanakan di Desa Binaan FFS UHAMKA, Bintara RT 007, Kota Bekasi. Metode penelitian yang digunakan terdiri dari beberapa tahapan yang dijelaskan sebagai berikut:

1. Identifikasi kebutuhan dan analisis situasi

Sebelum melaksanakan kegiatan, tim peneliti melakukan observasi dan wawancara dengan 19 warga setempat yang telah dipilih secara *purposive* berdasarkan kriteria yang telah ditentukan (warga yang sedang menjalani pengobatan). Proses ini bertujuan untuk memahami kebutuhan mereka terkait penggunaan obat saat berpuasa. Hasil analisis situasi ini digunakan untuk merumuskan materi edukasi yang sesuai dengan kebutuhan masyarakat.

2. Pengembangan materi edukasi

Materi edukasi disusun secara komprehensif, mencakup informasi tentang cara mengkonsumsi obat yang tepat selama puasa, serta memberikan contoh obat yang relevan berdasarkan jenis penyakit umum yang dihadapi masyarakat. Pengembangan materi ini melibatkan pengetahuan dari apoteker sebagai pemateri dan referensi dari Kementerian Kesehatan RI (Kemenkes 2019).

3. Pelaksanaan penyuluhan

Kegiatan penyuluhan dilakukan dalam format ceramah interaktif berdurasi 2 jam dengan apoteker sebagai pemateri. Selama sesi, peserta diajak untuk berdiskusi dan dapat langsung mengajukan pertanyaan terkait permasalahan penggunaan obat saat

berpuasa. Untuk memudahkan pemahaman, materi presentasi menggunakan alat bantu visual berupa slide presentasi dan leaflet yang dibagikan kepada peserta.

4. Evaluasi dan umpan balik

Setelah kegiatan, evaluasi dilakukan dengan membagikan kuisioner kepada 19 peserta (*pre* dan *post test*) terdiri dari 10 pertanyaan yang mengukur peningkatan pengetahuan mengenai penggunaan obat saat berpuasa, serta memperoleh umpan balik dari peserta tentang pengalaman mereka selama penyuluhan. Analisis data dilakukan dengan menggunakan metode statistik *t-Test: Paired Two Sample for Means* untuk memahami perubahan pengetahuan peserta (Gupta 2020).

HASIL DAN PEMBAHASAN

Kegiatan pengabdian masyarakat yang bertemakan “Edukasi Penggunaan Obat saat Berpuasa” di Desa Binaan FFS UHAMKA ini bertujuan untuk meningkatkan pengetahuan dan kesadaran masyarakat tentang penggunaan obat yang benar saat berpuasa. Penelitian ini menunjukkan bahwa edukasi yang efektif dapat mempengaruhi sikap dan perilaku masyarakat terhadap kesehatan mereka, terutama terkait penggunaan obat saat puasa. Salah satu permasalahan yang ditemukan di masyarakat adalah kurangnya pengetahuan mengenai waktu dan cara minum obat yang tepat saat berpuasa. Hal ini sejalan dengan temuan dari penelitian sebelumnya yang menyatakan bahwa banyak individu memiliki kebingungan dan ketidakpercayaan terkait pengobatan selama bulan puasa (Nabila et al., 2018). Oleh karena itu, pendekatan edukasi yang dilakukan melalui penyuluhan interaktif memberikan dampak positif yang signifikan.

Peningkatan pemahaman masyarakat diukur melalui *pre* dan *post test* (Gambar 1). Peserta yang mengisi lengkap soal *pre test* dan *post* sebanyak 19 orang. Data yang didapat kemudian diolah dengan statistik uji *t-Test: Paired Two Sample for Means* (Gupta 2020).



Gambar 1. Peserta sedang mengerjakan *pre test*

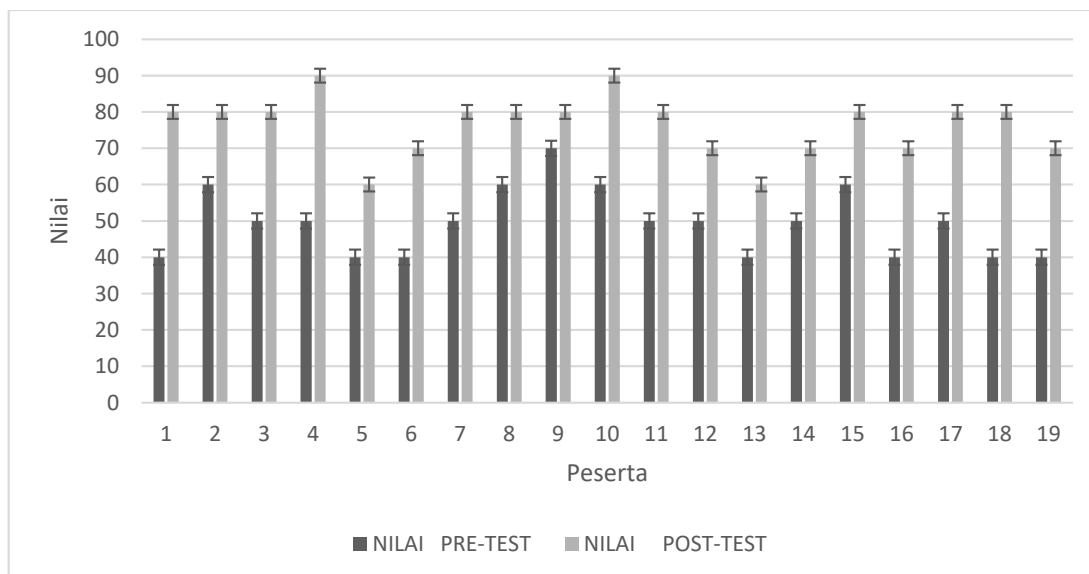
Uji statistik t-Test dilakukan untuk mengevaluasi perbedaan signifikan antara nilai post-test dan pre-test dalam suatu penelitian. Hasil uji statistik ini, menunjukkan rata-rata nilai pre-test adalah 49,47 sedangkan rata-rata nilai post-test adalah 76,32. Varians nilai pre-test sebesar 83,04 dan varians nilai post-test sebesar 69,01 dengan jumlah observasi sebanyak 19. Korelasi Pearson antara nilai pre-test dan post-test sebesar 0,560. Dengan hipotesis bahwa tidak ada perbedaan rata-rata antara nilai pre-test dan post-test, derajat kebebasan (df) adalah 18. Hasil uji t berpasangan menunjukkan adanya perbedaan yang signifikan antara nilai pre-test dan post-test. Rata-rata nilai post-test (76,3158) lebih tinggi dibandingkan dengan rata-rata nilai pre-test (49,4737). Nilai t hitung sebesar -14,2673 dengan derajat kebebasan 18 menghasilkan nilai p sebesar 2,97074E-11. Karena nilai p lebih kecil dari taraf signifikansi umum 0,05, maka hipotesis nol yang menyatakan tidak ada perbedaan antara kedua kelompok ditolak (Howell 2016).

Analisis statistik yang dilakukan menunjukkan bahwa terdapat perbedaan yang signifikan antara nilai *pre-test* dan *post-test*. Hasil ini dapat digunakan untuk mengambil kesimpulan tentang efektivitas suatu intervensi atau pengaruh suatu faktor tertentu terhadap variabel yang diukur (Siska et al. 2024). Namun, perlu dicatat bahwa hasil analisis ini hanya berlaku untuk data yang dianalisis dan tidak dapat digeneralisasi ke populasi atau situasi lainnya tanpa penelitian lebih lanjut (Saleh et al. 2024). Hasil analisa statistik terkait peningkatan pengetahuan peserta pengmas dapat dilihat di Tabel 1.

Tabel 1. Hasil uji statistik t-Test: *paired two sample for means* untuk *pre* dan *post test*

	NILAI PRE-TEST	NILAI POST-TEST
Mean	49,47368421	76,31578947
Variance	83,04093567	69,00584795
Observations	19	19
Pearson Correlation	0,560083567	
Hypothesized Mean Difference	0	
df	18	
t Stat	-14,26732357	
P(T<=t) one-tail	1,48537E-11	
t Critical one-tail	1,734063607	
P(T<=t) two-tail	2,97074E-11	
t Critical two-tail	2,10092204	

Peningkatan rata-rata skor peserta mencapai 30% dibandingkan antara pre dan post test (Gambar 2).



Gambar 2. Nilai *pre* dan *post test* peserta PKM

Metode penyuluhan yang digunakan adalah kombinasi ceramah, diskusi, dan distribusi materi informasi. Penggunaan media seperti leaflet dan poster juga terbukti efektif dalam meningkatkan daya tarik materi edukasi (Stellefson et al. 2020). Menurut penelitian oleh Dirgantara et al (2024), pendidikan kesehatan yang melibatkan peserta secara aktif dalam diskusi mampu meningkatkan minat dan pemahaman, serta memberikan kesempatan bagi peserta untuk berbagi pengalaman dan pertanyaan (Dirgantara et al. 2024).

Partisipasi aktif yang terjadi selama sesi tanya jawab mencerminkan minat masyarakat untuk memahami lebih dalam mengenai obatan dan kesehatan. Diskusi antara peserta dan narasumber memungkinkan adanya pertukaran informasi yang lebih dinamis, sehingga peserta dapat merasakan langsung dampak dari pengetahuan yang diperoleh (Haughtigan et al. 2023). Hal ini menunjukkan pentingnya keterlibatan langsung dalam pembelajaran untuk meningkatkan retensi informasi (Gambar 3).



Gambar 3. Diskusi interaktif dengan para peserta PKM

Selain hasil yang positif, penyebaran informasi melalui berbagai saluran media juga memainkan peran kunci dalam meningkatkan kesadaran masyarakat. Publikasi artikel di media massa dan video kegiatan yang diunggah di platform digital menunjukkan bahwa informasi kesehatan dapat menjangkau audiens yang lebih luas. Menurut Susilo et al. (2021), penggunaan media sosial dan digital marketing sangat efektif dalam menyebarkan informasi kesehatan dan memperkuat kesadaran masyarakat mengenai isu-isu Kesehatan (Susilo, Jayanto, and Kusumawaty 2021). Kegiatan pengabdian ini menekankan pentingnya kolaborasi dengan berbagai pihak, termasuk pemerintah lokal dan lembaga kesehatan, untuk menciptakan program edukasi yang lebih terintegrasi. Keterlibatan berbagai *stakeholders* dalam pendidikan kesehatan dapat menciptakan dampak yang lebih besar dan berkelanjutan (Nickel and Knesebeck 2020).

Dengan demikian, kegiatan edukasi mengenai penggunaan obat saat berpuasa ini tidak hanya berdampak pada pengetahuan individu, tetapi juga memiliki potensi untuk merangsang perubahan perilaku positif dalam masyarakat. Model pendidikan kesehatan yang telah diterapkan selama kegiatan ini menghadirkan peluang untuk replikasi di kegiatan serupa di masa depan, yang pada gilirannya dapat meningkatkan kesehatan masyarakat secara umum.



Gambar 4. Peserta PKM Desa Binaan UHAMKA

SIMPULAN

Kegiatan edukasi tentang penggunaan obat saat berpuasa berhasil meningkatkan pengetahuan dan kesadaran masyarakat yang signifikan. Metode partisipatif dan pemanfaatan media yang bervariasi efektif dalam menyampaikan informasi kesehatan.

SARAN

Bahwa untuk kelanjutan kegiatan Pengabdian kepada Masyarakat (PKM) mengenai edukasi penggunaan obat saat berpuasa, disarankan agar kegiatan dilakukan lebih rutin dengan materi yang diperbaharui secara berkala dan diterapkan metode interaktif. Penting

untuk menjalin kolaborasi yang erat dengan lembaga kesehatan dan komunitas lokal, serta menyediakan kontak informasi bagi peserta untuk akses saran terkait obat. Evaluasi sistematis terhadap dampak kegiatan perlu diterapkan, bersamaan dengan pemanfaatan teknologi untuk memperluas jangkauan informasi melalui platform online. Selain itu, melaksanakan kampanye kesadaran kesehatan menggunakan media massa dan sosial dapat meningkatkan pemahaman masyarakat tentang penggunaan obat yang aman selama puasa.

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COMMUNITY EMPOWERMENT THROUGH THE ENHANCEMENT OF ENTREPRENEURSHIP IN THE PRODUCTION OF LOTION AND MOSQUITO SPRAY FOR DENGUE FEVER IN SUKMAJAYA, DEPOK

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ABSTRACT

Dengue fever has become one of the endemic diseases in the Sukmajaya area of Depok. This disease can claim the lives of up to 10% of those affected. Community empowerment, particularly through the empowerment of PKK groups. This community service aims to increase the community's ability to prevent the spread of the *Aedes aegypti* mosquito through empowering the PKK group community. It can prevent the spread of mosquitoes by introducing natural materials as mosquito repellents and creating lotion and spray products as alternative solutions. The program involves training and assistance in producing lotions and sprays using natural ingredients. Using essential oils as raw materials, along with marketing techniques, can be a solution to address this issue. The Community Service Team of the Faculty of Pharmacy and Science (FFS) UHAMKA and the Faculty of Economics and Business (FEB) UHAMKA provided comprehensive training and guidance in the pharmacy skills program. Participants were instructed on creating lotion and mosquito repellent spray formulations using natural ingredients, including orange leaf extract, orange oil, lavender oil, and clove oil. The training consisted of lectures followed by a hands-on workshop on entrepreneurship, focusing on the importance of selecting appropriate packaging and promoting the products effectively. Participants are very enthusiastic about acquiring this skill because it enhances the capabilities of PKK administrators in utilizing natural materials in forms that will later boost the spirit of entrepreneurship and help prevent dengue fever.

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INTRODUCTION

Sukmajaya, Depok, is an area that is prone to the spread of dengue fever due to the high population of *Aedes aegypti* mosquitoes. Efforts to control dengue fever have been carried out by the local government through the *Jumantik* program, or mosquito larvae monitoring. However, this activity remain suboptimal due to a lack of community participation (Lukiyono *et al.*, 2022). The number of dengue fever cases in Sukmajaya, Depok, remains quite high, so additional measures are needed to address this issue. In 2024, there were 700 reported cases of dengue fever in Sukmajaya, Depok. (Yauwan *et al.*, 2022). Eleven sub-districts and 63 villages are classified as endemic areas, although reports from the city of Depok indicate that efforts to eradicate mosquito breeding sites (PSN) have successfully increased the larva-free rate (ABJ) to a safe value of 95.02% in 2020 ($\geq 95\%$). (Mary *et al.*, 2023)

One innovation that can be implemented to reduce the spread of dengue fever is empowering women through the enhancement of entrepreneurship in the production of mosquito-repellent lotion. Empowering women by improving their knowledge and skills in creating effective mosquito repellent lotion, and spray products is one way to help prevent dengue fever within the surrounding community (Desak *et al.*, 2023) (Widya dan Weny *et al.*, 2023). The PKK in Sukmajaya, Depok, is a women's organization with great potential for empowerment.

The PKK is a women's organization that has the potential to be empowered in the prevention of dengue fever (Angela dan Denny., 2023). The women's empowerment program through training in producing mosquito-repellent lotion aligns with the government's efforts to improve family welfare through the PKK movement. This activity can also support the PKK's work programs related to family health (Nisrina *et al.*, 2023) The Faculty of Pharmacy at Muhammadiyah University Prof. Dr. Hamka, in collaboration with the Faculty of Economics and Business, has carried out community service in Sukmajaya, Depok, to fulfill the *Tri dharma* of higher education. This initiative aims to equip the community with practical means for dengue fever prevention while also fostering entrepreneurial opportunities.

Lotion is a topical preparation that is typically less thick and greasy than ointments, but thicker and more viscous than creams. Its emulsion form allows for easy application and washing off from the skin, making it a suitable choice for mosquito repellents (Sutaryono *et al.*, 2020). The benefit of lotion as a repellent formulation lies in its ability to carry active ingredients, such as essential oils and plant extracts, that have proven mosquito-repellent properties (Oyedele *et al.*, 2002) (Sutaryono *et al.*, 2020). The process of making lotion is

straight forward and can be easily adopted by local communities. Several studies have investigated the mosquito-repellent properties of various plant-based ingredients. The active ingredient for repellent lotion consists of essential oils like camphor, cinnamon, citronella, lemongrass, lime, orange, neem, basil, Vitex, Lantana, eucalyptus, and clove. Essential oils are natural, biodegradable, and generally considered safe for topical application (Rogahang et al., 2023)(Oyedele et al., 2002)(Reegan et al., 2014). Lemongrass oil, in particular, has shown promising mosquito-repellent activity, with ointment and cream formulations containing 1% v/v lemongrass oil exhibiting repellency rates of 50% or greater for 2-3 hours (Oyedele et al., 2002). This was comparable to the performance of commercial synthetic mosquito repellents (Oyedele et al., 2002). The combination of essential oils can also produce synergistic effects. A study found that a formulation containing a blend of essential oils, including camphor, cinnamon, citronella, lemongrass, lime, orange, neem, basil, Vitex, Lantana, eucalyptus, and clove, showed strong mosquito repellency against *Culex quinquefasciatus* and *Aedes aegypti* mosquitoes (Reegan et al., 2014).

MATERIAL AND METHOD

To address the issues faced by partners in enhancing the knowledge and skills of the Sukmajaya Depok PKK administrators in the production of lotion and mosquito repellent spray, the following steps are implemented:

1. Socialization Stage

The socialization of the activities is conducted to prepare the participants from the partner organization who will take part in the implementation, ensuring that participants allocate free time and that the target number of participants is achieved. The socialization process involves announcements and communication through the PKK management of RW 026 Sukmajaya, Depok.

This stage also involves designing the service activities that will be implemented. It involves the preparation of locally available materials in the Sukmajaya area that can be used as repellents, as well as the procurement of additional materials to produce repellent formulations and mosquito spray. The formulation of repellent and mosquito repellent preparations is carried out, alongside the development of pre-test and post-test instruments to quantitatively measure the community's improvement in knowledge and skills regarding the use of natural materials for mosquito repellents and the creation of simple pharmaceutical preparations.

2. Training Stage

2.1. Pre-test

A pre-test is conducted before the training begins. The pre-test is given in the form of multiple-choice questions, consisting of 15 questions. The questions cover topics that will be addressed during the training. The pre-test is conducted within 10 minutes.

2.2. Lecture

Participants will receive a lecture on techniques using natural materials that can be effective as repellents or mosquito deterrents. This activity is carried out by bringing several examples of natural materials that can be used. Participants are introduced to the process of producing simplicia from natural materials, which are later transformed into extracts, serving as raw materials to produce lotions and sprays. The lecture activities are also used to introduce the ingredients in the formulation of spray and lotion preparations. To enhance, participants are also provided with material modules and leaflets on natural ingredients for mosquito repellent. Before the lecture, participants are given a pre-test first.

2.3. Training on the preparation of mosquito repellent lotion and spray

Stage one: Participants are taught how to make simplicia and extracts.

Stage two: Participants are taught how to prepare the spray formulation.

Stage three: Participants are taught how to prepare the lotion formulation.

The formula for preparing the spray formulation is adapted and modified from Made's research (2023).

3. Stage of Technology Application

The application of technology is carried out by providing participants with the opportunity to create repellent and spray as mosquito deterrents. During this stage, participants are divided into groups of four. Each group attempts to create one type of formulation.

4. Support and Evaluation Stage

4.1. Hedonic Testing

Participants assess the comfort level of the lotion and spray formulations they have created. This includes assessing factors such as spreadability and any potential adverse effects, such as erythema or allergies.

4.2. Evaluation

The evaluation is conducted through a post-test after the training, with the questions being the

same as those given during the pre-test. This allows for the collection of data to inform any improvements in participants' knowledge and skills as a result of the PKM activities.

4.3. Monitoring

Monitoring of dengue fever patients is conducted in the following month after education is provided. Data is obtained from the village to observe the trend in the number of patients over several months. Comparisons are made between the number of dengue fever cases in 2024 and 2025 to determine whether there is a decrease in the number of patients due to changes in behavior/lifestyle after receiving counseling and training.

5. Program Sustainability Stage

The sustainability stage of the program is carried out by examining whether new business ventures arise from the community service activities, and if so, they are facilitated by providing information for the processing of production permits, in accordance with the applicable requirements. The quantification of income increase can be obtained from the rise in the number of businesses related to community service that is carried out.

Continued assistance is still needed. If there are unresolved questions or obstacles preparing lotion or spray formulations, participants can contact the service team via email, or the phone number provided by the contact person.

RESULT AND DISCUSSION

Empowering women through the enhancement of entrepreneurial skills in producing lotion and mosquito repellent spray for dengue fever prevention is a very important initiative. This activity not only provides new skills for women in Sukmajaya Depok, but it can also serve as an alternative source of income for them. (Widiarto *et al.*, 2022). In this community service activity, the UHAMKA pharmacy team has successfully assisted and provided counseling to the members of the PKK in the Sukmajaya RW community in Depok.

Through the training on making lotion and mosquito repellent spray, it is hoped that their knowledge and skills in entrepreneurship can be enhanced (Widiarto *et al.*, 2022). The lotion is a cosmetic preparation used to moisturize, soften, and protect the skin, and it can also serve as a base for other active ingredients, such as sunscreen, antiseptics, or even mosquito repellent (Leviana *et al.*, 2020). The mosquito-repellent lotion created is a semi-solid preparation with two types: a yellowish-green variety containing essential oils and citrus leaf extract as raw materials and a white variety containing only essential oils for the active

ingredients. Lavender oil is widely used as a mosquito repellent; the active compounds in lavender oil are known to repel or eliminate mosquitoes (Inayati & Dhanti, 2021) (Nurhasanah *et al.*, 2020) (Lestari & Pahriyani, 2020) (Widiarto *et al.*, 2022). The linalool and linalyl acetate compounds in lavender oil has good mosquito-repelling activity (Lestari & Pahriyani, 2020; Nurhasanah *et al.*, 2020). These bioactive compounds disrupt the mosquito's nervous system, causing confusion and deterring biting behavior . (Lesmana *et al.*, 2021).

Clove oil is also known to have mosquito-repellent properties. Its active compound , eugenol, can be an alternative active ingredient to produce mosquito repellent lotion. (Lestari & Pahriyani, 2020). Lime oil, in this context, refers to lime (*Citrus aurantiifolia* L.) which is known to have good mosquito-repelling activity (Lestari & Pahriyani, 2020). Components such as limonene, citral, and geranyl acetate, exhibit effective mosquito-repelling properties. (Lestari & Pahriyani, 2020).

Mosquito spray is a preparation applied by spraying onto the skin, where its scent is released can influence the olfactory stimuli of mosquitoes (Sahidin *et al.*, 2019). Spray serves as a good alternative to an anti-mosquito solution because it offers practical advantages in usage, provides quick effects, and delivers effective results (Sahidin *et al.*, 2019) (Lestari & Pahriyani, 2020).(Lamin *et al.*, 2023). Active compounds with mosquito-repelling properties function by inhibiting the mosquito's olfactory receptors, thereby repelling mosquitoes or hindering their activity. (Lamin *et al.*, 2023)

This community service activity was held on Friday, September 21, from 08:00 AM to 12:00 PM WIB. The participants, consisting of 25 administrators from RW Sukmajaya, Depok, attended the event in person. All activities were conducted offline.

The event began with an opening by the MC, followed by speeches Mrs. Nurmala, the head of the PKK RW Sukmajaya Depok; Mr. Sodik Murdiono, S.Pd, MM the village head of Sukmajaya; , and Mrs. Rini Prastiwi, a representative of the community service activity leadership team.



Figure 1.
Product spray presentation by each group

The pretest was conducted after the opening ceremony. Participants were given 15 questions based on the material during the session. The allotted time for completion was 10-15 minutes. The event continued with a presentation on natural materials that can be used as mosquito repellents. These natural materials were brought to the session, and their benefits and applications as mosquito repellents were thoroughly explained to the participants. The presentation was delivered by Mrs. Vera Ladeska.



Figure 2.
Product Lotion presentation by each group

The next activity was the presentation of material on making lotion and mosquito repellent spray, delivered by Mrs. Rini Prastiwi. The material was presented along with examples of the spray and lotion that had been previously made by the service team. Next, the participants were then divided into several groups, with each group tasked with creating lotion

and spray preparations. They worked through the process of weighing ingredients, formulation, and transferring the final products into containers. The participants demonstrated great enthusiasm throughout the preparation activity. Spray formulations were prepared quickly, as the manufacturing process is relatively straightforward. For lotion formulation, participants must ensure that the lotion produced does not break and is homogeneous.



Figure 3.
Opening Event

After that, participants were allowed to take a short break to enjoy snacks for 10-15 minutes. The activity then continued with a presentation on selecting appropriate packaging for mosquito repellent spray and lotion products, as well as the business opportunities associated with them. This material is provided by Mrs. Dewi Pudji Rahayu, a lecturer at the Faculty of Economics and Business. The 20-minute presentation provides examples of packaging that can be used for mosquito repellent sprays and lotions.



Figure 4.
Making anti-mosquito lotion by participants



Figure 5.
Lotion and Mosquito Spray for Dengue Fever

At the final stage, participants were allowed to ask questions about the material presented. Product reviews, comments, and feedback from participants are collected. At this stage, the participants' enthusiasm is very high. In conclusion, the community service team provided materials including electric stoves, raw materials, and additives used in the production of mosquito spray and lotion, packaging, digital scales, mortars and pestles, a pocketbook containing instructions for making cream and lotion formulations, packaging, and pricing strategies that participants can use in their entrepreneurial endeavors. The documentation of the activities can be seen in Figures 3 and 4. while the pocketbook that was provided can be seen in Figure 6.



Figure 6.
Pocketbook

The increase in participants' knowledge can be seen in the picture. There was an increase before and after the implementation of the activity, particularly in three aspects: dengue fever, isolation of essential oils, and also about entrepreneurship. Knowledge gains reached above 80%, as shown in Figure 7.

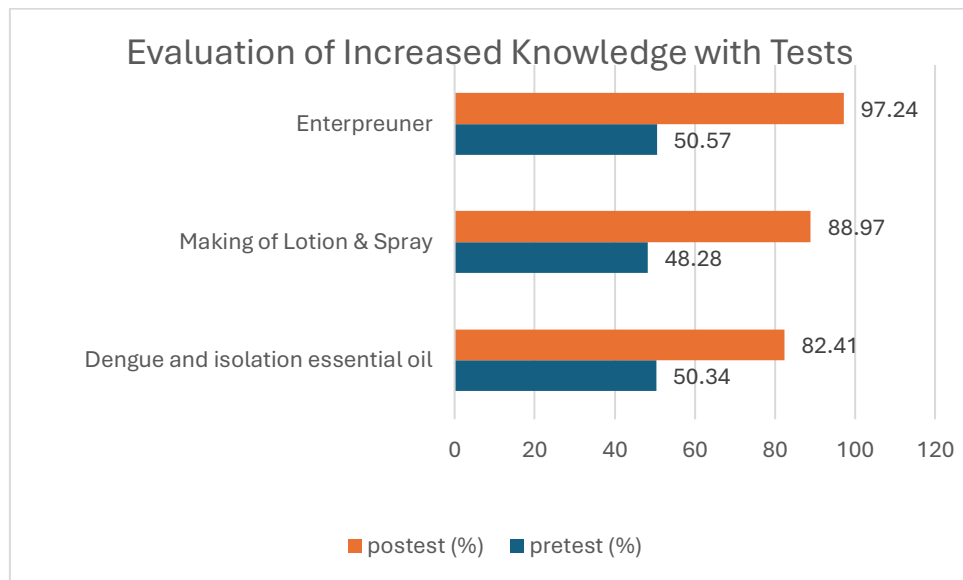


Figure 7.

Evaluation of Increased Knowledge with Tests

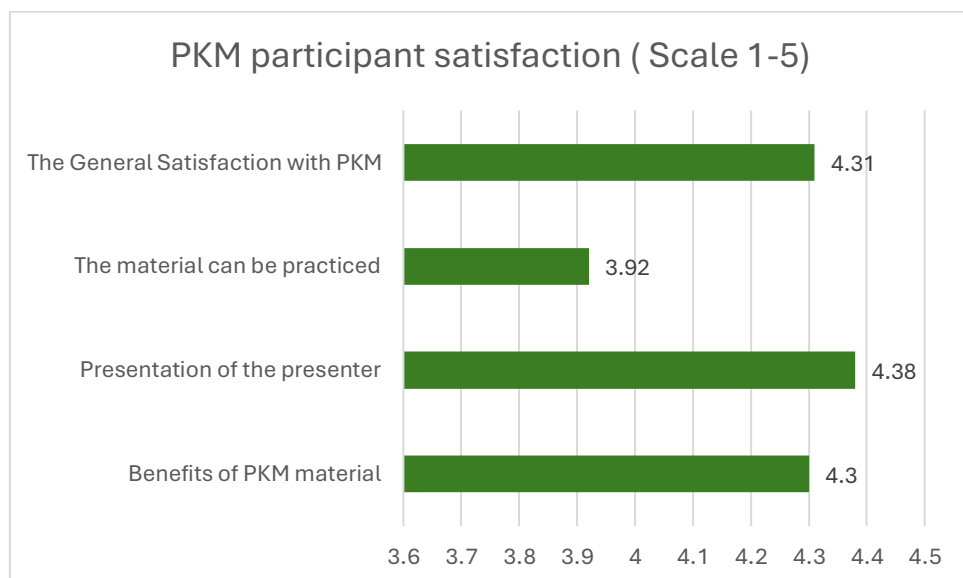


Figure 8.

PKM participant satisfaction (Scale 1-5)

CONCLUSION AND RECOMMENDATION

Enhancing the understanding of the Depok community regarding the utilization of natural materials to produce pharmaceutical preparations, such as sprays and lotions, is essential. This initiative not only provides valuable knowledge for the prevention of dengue fever but also creates a business opportunity for the community. The process of making sprays and lotions requires guidance, as formulations derived from natural materials exhibit unique characteristics depending on the specific extract used. Therefore, ensuring the quality of these products necessitates both a supportive production process and a thorough evaluation of the formulations.

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