p-ISSN: 2089-6778
e-ISSN: 2549-5054

# THE IMPACT OF "5M PLUS" HEALTH EDUCATION WITH LEAFLETS ON THE PREVENTIVE KNOWLEDGE OF DENGUE FEVER INCIDENCE IN STUDENTS OF SMPN 01 PAKISAJI PAKIS DISTRICT

**Olvy Oriska Oktaviani[1)], Swaidatul Masluhiya AF[2)], Hilda Mazarina Devi[3)]**
Email : olvyoriskaoktaviani@gmail.com[1)], swaee.af@gmail.com[2)], hmazarina@gmail.com[3)]
[1,2,3)] Bachelor of Nursing, Faculty of Health Science, Universitas Tribhuwana Tunggadewi, Malang, East Java, Indonesia

**Article Information**

**Received:**
September 04, 2023

**Revised:**
November 15, 2023

**Accepted:**
January 02, 2024

**Available Online:**
January 30, 2024

***Abstract***

*Dengue hemorrhagic fever (DHF) is caused by a combination of agent, environment, and host (human) factors, with humans playing a crucial role in preventing DHF through knowledge of 5 M Plus. This study aimed to assess the influence of 5M health education plus leaflets on the preventive knowledge of DHF incidents in students of SMPN 01 Pakisaji, Pakis District, Malang Regency. The study used a pre-experimental design with a one-group pre-post test. The study population comprised 212 class VII students of SMPN 01 Pakisaji, with a total sample of 138 students selected using quota sampling. The independent variable was 5M Plus health education with leaflet media, while the dependent variable was knowledge of DHF prevention. The instrument used was a knowledge questionnaire on the prevention of DHF events. Data analysis was conducted using the marginal homogeneity test, which revealed improved DHF preventive knowledge after receiving 5 M plus health education, shifting from the less category (51.4%) to the excellent category (52.9%). The study found a significant effect of 5M plus health education with leaflets on the preventive knowledge of DHF events in class VII students of SMPN 01 Pakisaji, Pakis District, Malang Regency, with a p-value of 0.000. It is anticipated that students will be able to apply 5 M Plus in both family and school environments*

***Keywords:*** *Dengue Hemorrhagic Fever (DHF), Leaflets, Knowledge, Health Education.*



***Correspondence:***
Olvy Oriska Oktaviani, Jl. Joyo Taman Sari, Kelurahan Merjosari, Kecamatan Lowokwaru, Kota Malang, Jawa Timur 65144, Phone Number: xxxxxxx59868
Email olvyoriskaoktaviani@gmail.com

## 1. Introduction

Dengue fever, also known as Dengue Hemorrhagic Fever (DHF), is a viral illness transmitted by the *Aedes aegypti* mosquito, and it is associated with significant morbidity and mortality. Clinical manifestations typically include a febrile phase lasting 2-7 days and a transient rash. Individuals of all age groups are susceptible to the disease, with particular vulnerability observed among school-aged and adolescent populations.[1, 2]

According to the World Health Organization (2020), the global burden of dengue fever is substantial, with an estimated annual incidence of 50-100 million cases.[3] In 2020, the Indonesian Ministry of Health reported 65,432 cases, with a significant concentration of 5,961 cases in East Java, particularly in the Malang District. Subsequently, in 2022, the incidence of dengue fever in Malang escalated, with 600 individuals affected, including 65 cases documented in the Kecamatan Pakis area from January to

p-ISSN: 2089-6778
e-ISSN: 2549-5054

September. Notably, eight patients were admitted to the Pakis Health Center during the first week of October 2022.

The incidence of dengue fever is shaped by a multitude of factors, encompassing the viral agent, host-related determinants (e.g., age, nutritional status, population dynamics, socio-economic conditions, knowledge, behavior, and interventions), and environmental variables (e.g., geographical distribution, seasonal patterns, temperature, wind conditions, precipitation, breeding sites for mosquitoes, solar radiation, and altitude). Knowledge about dengue prevention assumes paramount significance in overall disease control. Adopting and implementing preventive strategies, such as the "5M Plus" approach (Drainage, Covering, Cleaning, Monitoring, Maintenance, and additional measures), are pivotal. Studies have revealed variations in the awareness and adoption of dengue prevention measures across diverse demographic cohorts, highlighting the need for targeted interventions to enhance understanding and compliance within specific populations.[2, 4]

The comprehension of dengue prevention strategies is integral to mitigating dengue fever [5] .This understanding encompasses a set of preventive measures, commonly called the "five M Plus": Drainage, Covering, Cleaning, Monitoring, Maintenance, and additional interventions. This framework is consistently emphasized across various sources, including the Malaka District Health Office, Yuniati's research, and the findings of. [6] Notably, research by [7] has identified varying levels of knowledge regarding dengue prevention, particularly among adolescents, with disparities in the sufficiency of this knowledge. [8]

Health education plays a pivotal role in imparting knowledge about dengue fever prevention, aiming to empower individuals, particularly adolescents, with the necessary understanding of preventive measures.[9] This educational process is often facilitated through various media, including print materials such as brochures, leaflets, flyers, flip charts, posters, and other interactive formats. [10]

The utilization of leaflets as a health promotion tool for dengue fever prevention has been highlighted in the literature.[9] have demonstrated the efficacy of leaflets in enhancing knowledge about dengue fever prevention among adolescents and schoolchildren. However, the need for more research evaluating the impact of health education using leaflets on dengue fever prevention knowledge underscores the need for further investigation.[11]

The urgency of this issue is underscored by the escalating incidence of dengue fever, particularly during seasonal changes marked by increased rainfall. The potential severity of dengue fever and the associated mortality risk necessitates comprehensive preventive measures. Consequently, the investigation of health education using leaflets as a means to augment knowledge about dengue fever prevention assumes critical significance.

In light of the preliminary study conducted at SMPN 01 Pakisaji, Pakis District, Malang Regency, it is evident that a substantial proportion of students exhibited limited awareness of dengue fever prevention measures. This observation underscores the necessity of further research to assess the impact of health education employing 5 M Plus leaflets on dengue fever prevention knowledge among students at the aforementioned institution.Hence, the proposed research aims to ascertain the impact of health education utilizing 5 M Plus leaflets on dengue fever prevention knowledge among students at SMPN 01 Pakisaji, Pakis District, Malang Regency. This investigation seeks to contribute to the existing body of knowledge by evaluating the effectiveness of this educational approach in enhancing awareness and understanding of dengue fever prevention measures among the student population.

p-ISSN: 2089-6778
e-ISSN: 2549-5054

## 2. Method

The study used a pre-experimental design with a one-group pre-post-test design. The study involved 212 students from SMPN 01 Pakisaji, Pakis District, Malang Regency, with a sample size of 138 students selected using the quota sampling technique. The inclusion criteria required the participants to be seventh-grade students at SMPN 01 Pakisaji during the 2022/2023 academic year and willing to participate in the study. The independent variable was the 5M Plus health education with leaflet media, while the dependent variable was the preventive knowledge of dengue fever (DBD). Data collection involved a questionnaire assessing knowledge of the 5 M Plus, a modified version of the instrument used in a previous study [12]. The study took place at SMPN 01 Pakisaji, Pakis District, Malang Regency, from May 22 to June 18, 2023, with data analysis conducted using the marginal homogeneity test ($p < 0.05$).

## 3. Result and Discussion

**Table 1.** Distribution of Characteristics of Respondents

| Characteristic | *f* | % |
|---|---|---|
| Age | | |
| 12 years-old | 11 | 8,0 |
| 13 years-old | 100 | 72.5 |
| 14 years-oldn | 23 | 16.7 |
| 15 years-old | 4 | 2.9 |
| Sex | | |
| Male | 59 | 42.8 |
| Female | 79 | 57.2 |
| Class | | |
| VII A | 26 | 18.8 |
| VII B | 26 | 18.8 |
| VII C | 25 | 18.1 |
| VII D | 27 | 19.6 |
| VII E | 17 | 12.3 |
| VII G | 17 | 12.3 |
| DHF | | |
| Information | 68 | 49.3 |
| Yes | 70 | 50.7 |
| No | | |
| Sources | 47 | 34.1 |
| television | 60 | 43.5 |
| mobile phone | 2 | 1.4 |
| newspaper | 29 | 21.0 |
| Internet | | |
| Family | 3 | 2.2 |
| Members | 18 | 13.0 |
| 2 people | 65 | 47.1 |
| 3 people | 33 | 23.9 |
| 4 people | 18 | 13.0 |
| 5 people | 1 | 0.7 |
| 6 people | | |
| 8 people | 116 | 84.1 |
| Fever | 22 | 15.9 |
| Ye | | |
| No | 16 | 11.6 |
| DHF | 122 | 88.4 |
| yes | | |
| No | | |

Table 1 presents the demographic characteristics of the student participants. The data indicates that most students were 13 years old (72.5%), with over half of the participants being female (57.2%). Furthermore, a minority of students belonged to class VII D (19.6%), and approximately half of the cohort did not receive prior information about dengue hemorrhagic fever (DBD), constituting 70 students (50.7%). In terms of information sources, less than half of the students used mobile phones to acquire information about dengue hemorrhagic fever, with 60 students (43.5%) reporting this as their source. Additionally, most students resided in households with four family members (47.1%). The data also reveals that most students had experienced fever or increased body temperature (116 students, 84.1%). At the same time, a significant proportion had not been previously diagnosed with dengue hemorrhagic fever (DHF) (88.4%).

**Table 2.** Bivariate Analysis of the Effect of "5M Plus" Health Education Utilize Leaflets on Preventive Knowledge of Dengue Hemorrhagic Fever (DHF) in Class VII Students of SMPN 01 Pakisaji, Pakis District, Malang Regency

| Variable | Knowledge (*Post-Test*) | | | | | | total | | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | Excellent | | Sufficient | | Poor | | | | |
| Knowledge (*Pre-Test*) | *f* | % | *f* | % | *f* | % | *f* | % | |

p-ISSN: 2089-6778
e-ISSN: 2549-5054

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Excellent | 20 | 14.5 | 0 | 0 | 0 | 0 | 20 | 14.5 | 0.000 |
| Sufficient | 47 | 34.1 | 0 | 0 | 0 | 0 | 47 | 34.1 | |
| Poor | 6 | 4.3 | 57 | 41.3 | 8 | 5.8 | 71 | 51.4 | |
| Total | 72 | 52.9 | 57 | 41.3 | 8 | 5.8 | 138 | 100 | |

The data presented in Table 2 illustrates that before administering 5 M Plus health education with leaflets, most students in the lower category exhibited awareness of methods to prevent the occurrence of dengue hemorrhagic fever (DHF) at a rate of 51.4%. Following the health education intervention, it was observed that over half of the students in the higher category possessed knowledge regarding the prevention of dengue hemorrhagic fever (DHF) at a rate of 52.9%. The findings from the marginal homogeneity test indicate that the 5 M Plus health education with leaflets has had a statistically significant impact on the preventive knowledge of dengue fever among seventh-grade students at SMPN 01 Pakisaji, Pakis District, Malang Regency (p-value=0.000<0.05).

Prior to the implementation of 5 M Plus health education with leaflets, students exhibited inadequate knowledge concerning the prevention of dengue hemorrhagic fever (DBD). [12] However, following the intervention, students improved their knowledge in this area. The results of the marginal homogeneity analysis confirm that the 5 M Plus health education with leaflets has influenced the preventive knowledge of the incidence of dengue hemorrhagic fever (DBD) among seventh-grade students at SMPN 01 Pakisaji, Pakis District, Malang Regency The understanding of preventive measures for dengue fever is influenced by many factors, including age, education, access to information, and environmental conditions, all of which impact the knowledge levels of 5 M Plus students. In order to enhance students' comprehension of preventing dengue hemorrhagic fever (DHF), implementing health education interventions, such as distributing informational leaflets, can be instrumental. [13] underscore health education's objective of improving health-related knowledge. Additionally, [9] posit that initiatives to augment preventive knowledge of dengue fever through disseminating leaflets containing 5 M Plus information can significantly elevate awareness about DHF prevention.[14]

**[5]**elucidates the influence of health education on the knowledge and attitudes of seventh-grade students regarding dengue prevention at SMP Negeri 3 Singaraja. Furthermore, research conducted by [15] demonstrates the impact of health education on DHF prevention behaviors among junior high school students at the Madrasah Mu'Allimin Muhammadiyah Yogyakarta Dormitory, yielding a statistically significant value of 0.000. [9] also underscore the efficacy of the leaflet method in augmenting knowledge about dengue hemorrhagic fever.

In conclusion, the utilization of leaflets is an effective means of disseminating information about the prevention of dengue hemorrhagic fever (DHF) through the 5 M Plus approach, thereby presenting an engaging and accessible strategy for enhancing knowledge regarding dengue fever prevention.

## 4. Conclusion

The study yields compelling evidence that the implementation of 5M Plus health education, supplemented by the distribution of leaflets, exerts a discernible influence on the preventive knowledge of dengue hemorrhagic fever (DHF) among seventh-grade students at SMPN 01 Pakisaji, Pakis District, Malang Regency, as indicated by a statistically significant p-value of 0.000. This study recommends integrating leaflet-based health education sessions, focusing on the 5 M Plus approach, conducted 1-2 times per semester, as a viable strategy for schools to bolster the preventive knowledge of DHF among their student population.

p-ISSN: 2089-6778
e-ISSN: 2549-5054

**5. Acknowledgment**

Gratitude is extended to the Nursing Study Program, Faculty of Health Sciences, Tribhuwana Tunggadewi University, and SMPN 01 Pakisaji for their invaluable assistance and unwavering support throughout the research endeavor, from its inception to completion.

**6. References**

[1] Kemenkes R1. Profil kesehatan Indonesa 2019 [Internet]. Kementrian Kesehatan Republik Indonesia. 2019. 487 p. Available from: https://pusdatin.kemkes.go.id/resources/download/pusdatin/profil-kesehatan-indonesia/Profil-Kesehatan-indonesia-2019.pdf

[2] Samad I, Handito A, Sugiarto A, Setiani E, Gunawan D, Silalahi FSM D. Membuka Lembaran Baru. Lap Tah 2022 Demam Berdarah Dengue. 2022;17–9.

[3] Isi D. Daftar Isi. J Din Vokasional Tek Mesin. 2018;3(1).

[4] Salikunna NA. Edukasi Tentang Pengetahuan Sikap Dan Perilaku Masyarakat Terhadap Pencegahan Demam Berdarah Dengue (DBD). J Pengabdi Farm dan Sains. 2022;1(1):31–5.

[5] Widiadnyani.PENGARUHPENDIDIKANKESEHATANTERHADAPPENGETAHUANDANPERILAKU SISWA DENGAN PERSEBARAN DEMAM BERDARAH DENGUE (DBD)DISEKOLAH. 2020;1(6):427–31.

[6] Ruminem R, Sari RP, Sapariyah S. Hubungan pengetahuan dengan Sikap Siswa dalam Pencegahan Penyakit Demam Berdarah Dengue (DBD) di SD Negeri No. 015 Kecamatan Samarinda Ulu. J Kesehat Pasak Bumi Kalimantan. 2018;1(2):51–71.

[7] Diarthini NLPE, Sudarmaja IM, Swastika IK, Ariwati NL. Peningkatan Kualitas Hidup Lansia Melalui Pelayanan Kesehatan dan Edukasi Kesehatan Secara Personal Pada Lansia dI Desa Melinggih Payangan Gianyar Bali. Talent Conf Ser Trop Med. 2020;19 Nomor 4(1):490–4.

[8] Anggraini FDP, Aprianti A, Muthoharoh NA, ... Hubungan Pengetahuan Dan Sikap Dengan Perilaku Pencegahan Dbd Di Puskesmas Rowosari Kota Semarang. Pros Semin … [Internet]. 2023;161–7. Available from: http://ojs.udb.ac.id/index.php/sikenas/article/view/2849%0Ahttp://ojs.udb.ac.id/index.php/sikenas/article/download/2849/2073

[9] Anggraeni ayu saraswati. Pengaruh Promosi Kesehatan Metode Ceramah Dan Leaflet Terhadap Peningkatan Pengetahuan Masyarakat Tentang Demam Berdarah Dengue Di Kecamatan Karangbinangun Kabupaten Lamongan [Internet]. 2020. Available from: https://jurnalkesehatan.unisla.ac.id/index.php/jev/article/view/207

[10] Jatmika SED, Maulana M, Kuntoro, Martini S. Buku Ajar Pengembangan Media Promosi Kesehatan. K-Media. 2019. 271 p.

[11] Espiana I, Lestari RM, Ningsih F. Hubungan Pengetahuan dan Sikap dengan Perilaku Masyarakat tentang Pemberantasan Sarang Nyamuk Demam Berdarah Dengue (DBD). J Surya Med. 2022;8(1):129–35.

[12] Jastika FR. Hubungan Tingkat Pengetahuan dan Sikap dengan Perilaku Pencegahan DBD (Demam Berdarah Dengue ) pada Kader di kota Malang. 2018;82.

[13] Masruroh L, Prayogo A, Listyaningrum S, Yusnita E, Ismail A, Biru ADT, et al. Upaya Peningkatan Pengetahuan Penyakit Demam Berdarah Dengue Masyarakat Desa Jelobo Kabupaten Klaten. War LPM. 2023;26(1):95–102.

[14] Rizhal M. Hubungan Pengetahuan

p-ISSN: 2089-6778
e-ISSN: 2549-5054

Dengan Pencegahan Penyakit Demam Berdarah Dengue ( Literature Review ) [Internet]. Vol. 1, Universitas dr Soebandi. 2021. 1–143 p. Available from: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwi4vqawr6GBAxU1yDgGHeHHAU8QFnoECBYQAQ&url=http%3A%2F%2Frepository.stikesdrsoebandi.ac.id%2F58%2F1%2F17010021%2520Moh.%2520Rizhal.pdf&usg=AOvVaw3HTV6pfTZUf66gjbY0v7LS&opi=89978449

[15] Archam R. Pengaruh Edukasi 3M Plus Terhadap Perilaku Pencegahan Demam Berdarah Dengue (DBD) Pada Siswa SMP di Asrama Madrasah Mu'allimin Muhammadiyah Yogyakarta. 2018;82.