Research Article

Bridging the Knowledge–Practice Gap in Dengue Prevention: A Descriptive Analysis of Community Behavior

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ABSTRACT

Introduction: Dengue hemorrhagic fever (DHF) in Indonesia is still a serious concern in the world, especially in endemic areas. This disease arises and is transmitted from the Dengue virus through the bite of the Aedes Aegypti mosquito, which can be suffered from toddlers to adults. If not treated immediately, it can lead to death. The government is promoting a mosquito nest eradication program through the 5M movement (draining, covering, burying, replacing water, and sprinkling larvicide powder) as a key preventive measure in reducing the spread of Aedes aegypti mosquitoes that depend on community behavior.

Objective: This study aims to find out the picture of community behavior in Mosquito Nest Eradication (5M) as an effort to prevent dengue fever in Banjar Tengkulak Kaja Kauh, the working area of the Regional Technical Implementation Unit of the Sukawati I Health Center.

Methods: The research was quantitative descriptive with a simple random sampling technique and involved 175 samples. Data was collected using questionnaires that have been tested for validity and reliability

Results: The results showed that the majority of respondents were categorized as having fair behavior, as many as 112 respondents (64%), 53 respondents (30.3%) had good behavior, and 10 respondents (5.7%) had poor behavior.

Conclusion: Most of the community's behavior was found to be in a fair category, which shows that although the community's knowledge and attitudes are relatively good, there is still a gap in the implementation of the action, so sustainable programs and social support are needed to increase the active participation of the community in the eradication of mosquito nests.

Keywords: Aedes, Government, Indonesia, Larva, Powders, Severe Dengue, Social Support, Virus

Background

Dengue Hemorrhagic Fever (DHF) is still a serious health problem in Indonesia despite a 35% decrease in cases in 2023 [1]. It was recorded that until the 22nd week of 2024, the incidence of dengue fever increased again to 146.6% per week compared to the previous year. The disease is a challenge in Indonesia and is endemic in more than 100 countries, with Asia as the region that bears around 70% of the global disease burden [2]. Dengue fever is an infectious disease transmitted through the bite of the Aedes aegypti mosquito and can affect all age groups. If not treated immediately, this disease can cause death [1,3].

Bali Province has always been in the top four positions, with Indonesia's highest dengue cases. Gianyar Regency is one of the districts with the highest cases, which has increased by 100% from 2022 to 2023. The Indonesian Ministry of Health stated that Gianyar Regency is one of the five regencies/cities in Indonesia with the highest dengue cases until the 22nd week of 2024 [1]. The highest distribution of dengue cases in Gianyar Regency in 2023 is in the work area of the UPTD Puskesmas in Sukawati I, with 167 cases compared to other work areas [4].The number of dengue cases at the Sukawati I Health Center until July 2024 reached 487 cases from six villages. The highest distribution of cases was in Kemenuh Village, with 130 cases, with Banjar Tengkulak Kaja Kauh as the area with the most dengue cases, reaching 36 cases, compared to 10 other Banjars.

The high incidence of dengue has a broad impact on society in terms of health, social, and economic aspects [5]. The surge in cases increases the burden on healthcare and risks disrupting the medical care system [6–8]. In addition, high medical costs can put financial pressure on families and communities, especially for those who experience severe cases and require intensive care in health facilities [9,10].

The government has issued various policies to control the spread of dengue, including Law No. 36 of 2009, which mandates efforts to prevent and control infectious diseases.[11] Different programs, such as the 1 House 1 Jumantik Movement and fogging, have not been optimal in reducing the incidence of dengue.[12] There is a 5M campaign program (draining (*Menguras*), closing (*Menutup*), changing water (*Mengganti*), burying used goods (*Mengubur*), and sowing larvicide powder (*Menabur*) where the effectiveness of this program still depends on the level of awareness and behavior of the community in maintaining environmental cleanliness.[12]

Some of the problems in Banjar Tengkulak Kaja Kauh, in the Working Area of Regional Technical Implementation Unit of the Sukawati I Health Center are related to efforts to eradicate mosquito nests through community 5M behavior, because the exposure is closely related to community behavior such as water storage, environmental maintenance, and self-protection against mosquito bites. The success of dengue prevention programs is highly dependent on behaviors that include knowledge, attitudes, and actions of the community, because the actions taken are often not in line with the knowledge and attitudes possessed.

Based on this description, the author is interested in researching the description of community behavior in the eradication of mosquito nests (5M) as an effort to prevent the occurrence of dengue fever in Banjar Tengkulak Kaja Kauh, in the Working Area of the Regional Technical Implementation Unit of the Sukawati I Health Center.

Method
Study design

This study uses a descriptive quantitative research design, presenting data as statistical numbers. The main objective is to describe the object or subject under study as it is, without considering the relationship between variables. Data were collected by administering questionnaires to respondents in the UPTD Puskesmas Sukawati I work area in the village of Tengkulak Kaja Kauh. The study was conducted over four days, from November 10 to 13, 2024.

Sample

The study population was all 308 family heads in Tengkulak Kaja Kauh. The sample used in this study was the heads of families in Tengkulak Kaja Kauh. The sampling technique used was probability sampling, specifically simple random sampling, which involves

randomly selecting population members, or the lottery technique. First, a list of the population is made based on the inclusion and exclusion criteria. Then, the list is put into a fishbowl, and 175 pieces of paper are randomly drawn.

Instruments

This research instrument is a closed questionnaire consisting of three parts and 15 positive and negative questions. The first part has five questions about knowledge, with the answer choices of "True" or "False." The second part has five questions about attitudes with the answer choices "Strongly Agree," "Agree," "Undecided," "Disagree," or "Strongly Disagree." The third part has five questions about actions with the answer choices "Always," "Often," "Sometimes," or "Never." The 5M questionnaire, which describes community behavior in eradicating mosquito nests as an effort to prevent dengue incidence, has been tested for validity and reliability by Putri et al. with 30 respondents, resulting in a valid and reliable instrument [13]. Test results for this questionnaire, with $\alpha = 0.01$, yielded r table (0.463) and r count (0.679) values, declaring the questionnaire valid [13]. Based on the reliability test Putri et al. conducted at the Klungkung II Health Center with 30 respondents, the questionnaire was declared reliable, yielding a result of 0.728 [13].

Data collection

Researchers began data collection after obtaining official permission from various related agencies and declaring ethical feasibility. Five enumerators, consisting of three jumantik cadres and two nursing students who had previously been briefed on data collection techniques, assisted the researchers. Data was collected door-to-door for four days. Respondents were given informed consent before filling out the questionnaire. The enumerators helped divide the work area and assisted the respondents in completing the questionnaires. After completion, the questionnaires were collected, checked for completeness, and analyzed by the researchers. Personal data confidentiality was maintained by not putting names on the questionnaires used only for academic purposes.

Data Analysis

A descriptive statistical analysis was conducted to determine the levels of knowledge, attitude, action, and behavior regarding mosquito nest eradication for dengue prevention among 175 randomly selected heads of households in Tengkulak Kaja Kauh. Frequencies and percentages were used to summarize the categorical variables.

Ethical Considerations

Approval was obtained from relevant authorities and ethical boards before data collection. Informed consent was secured from all participants, and confidentiality was maintained by ensuring anonymity in questionnaire responses. Enumerators were trained to uphold ethical standards while assisting with data collection, and participation was entirely voluntary. These measures ensured that the study respected the rights, dignity, and privacy of all participants.

Results

The respondents in this study had a dominant age range of 15-64 years; the youngest respondent was 15, and the maximum age was 64. The dominant gender is male. The last educational background is dominated by high school/vocational school graduates. Respondents are predominantly working in the private sector.

Table 1. Respondent characteristics (n= 175)

Characteristics Respondents		
Age	**Frequency (F)**	**Percentage (%)**
15-18 years old	5	2.9
19-59 years old	159	90.9
60-64 years old	11	6.3
Gender		

Characteristics Respondents		
Man	128	73.1
Woman	47	26.9
Education		
No School	10	5.7
Elementary School	48	27.4
Junior High School	82	46.9
Senior High School	33	18.9
Diploma/Bachelor	2	1.1
Work		
Civil servant	1	0.6
Private	66	37.7
Laborer	38	21.7
Self employed	61	34.9
Students	8	4.6
Unemployment	1	0.6

Based on the results of the study in Table 1, it was found that from 175 respondents, most of the respondents were aged 19-59 years (90.9%), and a small part were aged 15-18 years (2.9%). Most respondents were male (73.1%). In addition, most respondents had their last education in senior high school (46.9%), and two people (1.1%) did not attend school. Most of the respondents worked privately(37.7%), and only one person (0.6%) did not work.

Table 2. Level of Public Knowledge, Attitude, Action, and Behavior in Mosquito Nest Eradication as an Effort to Prevent Dengue Incidence (n=175)

Level of Knowledge	Frequency (F)	Percentage (%)
Good	114	65.1
Fair	61	34.9
Attitude		
Good	103	58.9
Fair	69	39.4
Poor	3	1.7
Action		
Good	41	23.43
Fair	69	39.43
Poor	65	37.14
Behavior		
Good	53	30.3
Fair	112	64
Poor	10	5.7

Based on Table 2, the data indicate that the majority of respondents possess good knowledge (65.1%) and an adequate attitude (58.9%), reflecting a generally positive understanding and perception. However, this does not consistently translate into practice, as only 23.43% demonstrate good action, while 39.43% and 37.14% fall into fair and poor action categories, respectively. Similarly, behavior is predominantly fair (64%), with only 30.3% exhibiting good behavior. These findings suggest a clear gap between knowledge and practice, highlighting the need for strategies that not only enhance awareness and

attitudes but also effectively promote behavioral and practical implementation.

Discussion

This study employed a descriptive quantitative design to assess the community's knowledge, attitudes, actions, and behaviors regarding mosquito nest eradication as a preventive measure against dengue fever. The methodology was structured to capture an accurate snapshot of the current state of awareness and practices among 175 heads of households in the Tengkulak Kaja Kauh village, using a validated and reliable closed-ended questionnaire. The sampling method, simple random sampling, ensured equal opportunity for selection, thus enhancing the representativeness and reducing selection bias. Data collection was conducted ethically, with informed consent obtained from participants and confidentiality maintained throughout, indicating strong adherence to research ethics and respect for human subjects.

The findings revealed that the majority of respondents (65.1%) had good knowledge of mosquito nest eradication, and 58.9% exhibited an adequate attitude toward these preventive efforts. These results reflect successful community education efforts and the likely impact of previous public health campaigns in disseminating knowledge [14]. However, a deeper concern arises when examining the action and behavior domains. Only 23.43% of respondents demonstrated good action, and 30.3% showed good behavior, while a combined 76.57% and 69.7% fell into fair or poor categories for action and behavior, respectively. This disparity between knowledge and implementation highlights a common challenge in public health: the knowledge–practice gap [15]. Knowing the right thing to do does not necessarily translate into doing it. Several factors may contribute to this, including lack of motivation, environmental barriers, insufficient community engagement, and possibly a lack of follow-up support from health authorities [16].

The predominance of respondents aged 19–59 (90.9%), most of whom were employed in the private sector and had completed at least junior or senior high school, suggests that this is an economically active and reasonably educated population. Therefore, the limited translation of knowledge into action may not stem from educational or cognitive limitations but rather from behavioral, structural, or social constraints [17]. For instance, while the respondents may understand the importance of eradicating mosquito nests, they may lack the time, resources, or community support needed to carry out these actions consistently [18]. Furthermore, the finding that 64% of respondents displayed only fair behavior suggests habitual or community-level practices that need to be addressed through sustainable interventions.

This study underscores the need for a multi-faceted approach to dengue prevention that goes beyond education. Behavioral change communication strategies, increased community involvement, routine monitoring by health workers, and the establishment of local policies or incentives to encourage regular mosquito nest eradication may be more effective in translating knowledge into sustained action [19,20]. Moreover, empowering community health volunteers and jumantik cadres to serve not just as information disseminators but also as motivators and facilitators of action may enhance outcomes. In conclusion, while knowledge and attitudes are foundational, transforming them into consistent preventive behaviors requires targeted, context-specific interventions that address both individual and structural barriers.

Limitations

This study has several limitations that should be considered when interpreting the findings. First, the use of a descriptive quantitative design limits the ability to explore causal relationships between knowledge, attitudes, actions, and behaviors. While the study provides a clear snapshot of current conditions, it does not explain why the knowledge–practice gap exists or identify underlying factors influencing behavior. Second, self-reported questionnaires were used to collect data, which may be subject to social desirability bias—respondents might overstate positive behaviors or attitudes. Third, the study was conducted only in one village (Tengkulak Kaja Kauh) within a limited timeframe (four days), which may restrict the generalizability of the findings to other

areas with different demographic or cultural characteristics. Additionally, external factors such as weather conditions, environmental sanitation, and prior exposure to dengue were not assessed, which could influence the community's actual practices.

Implications

Despite these limitations, the study offers important implications for public health practice and policy. The findings highlight the urgent need to bridge the gap between knowledge and practice in dengue prevention. Health promotion efforts should move beyond education and incorporate behavioral change strategies, such as community-based interventions, environmental modification, and routine monitoring by health workers. The involvement of local leaders and health cadres can enhance engagement and sustainability. From a policy perspective, the results suggest the need to integrate mosquito nest eradication behaviors into community health planning and school curricula, especially in high-risk dengue areas. Future research should consider mixed-methods or longitudinal designs to explore barriers to action and evaluate the long-term effectiveness of targeted interventions. Ultimately, this study reinforces the importance of designing public health strategies that not only inform but also empower communities to act consistently against vector-borne diseases like dengue.

Conclusions

This study provides valuable insights into the community's knowledge, attitudes, actions, and behaviors related to mosquito nest eradication as a preventive measure against dengue fever in Tengkulak Kaja Kauh. While the majority of respondents demonstrated good knowledge (65.1%) and adequate attitudes (58.9%), there remains a significant gap in translating this awareness into effective action and behavior, with only 23.43% and 30.3% reaching good levels, respectively. This highlights the persistence of a knowledge–practice gap in public health efforts. The findings emphasize the need for comprehensive and context-specific strategies that not only educate but also motivate and enable communities to consistently engage in preventive practices. Strengthening community involvement, reinforcing behavior change interventions, and supporting health workers and local cadres are essential to closing this gap and enhancing the effectiveness of dengue prevention programs.

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