The Open Public Health Journal
DOI: 10.2174/0118749445313514240603103844, 2024, 17, e18749445313514

ISSN: 1874-9445

RESEARCH ARTICLE **OPEN ACCESS**

Behavior of Controlling the Dengue Disease Vector through the One House One Jumantik Movement in Padang City: A Cross-sectional Study

Sevilla Ukhtil Huvaid[1,2], Nursyirwan Effendi[3,*], Yuniar Lestari[4], Hasmiwati[4], Afrizal[5], Rizanda Machmud[4], Nuzulia Irawati[4] and Delmi Sulastri[4]

[1]*Public Health Doctoral Programme, Faculty of Medical, Universitas Andalas, Padang, West Sumatra 25127, Indonesia*
[2]*Public Health Study Program, Faculty of Health Sciences, Universitas Baiturrahmah, Padang, West Sumatra 25172, Indonesia*
[3]*Social Anthropology Unit, Faculty of Social and Political Sciences, Universitas Andalas, Padang, West Sumatra 25163, Indonesia*
[4]*Medical Education, Faculty of Medical, Universitas Andalas, Padang, West Sumatra 25127, Indonesia*
[5]*Sociology Unit, Faculty of Social and Political Sciences, Universitas Andalas, Padang, West Sumatra 25163, Indonesia*

Abstract:

Introduction: The control of dengue vectors to reduce the number of dengue cases requires the participation of all levels of society in its implementation. However, this vector control activity is still not running optimally, and many obstacles have been encountered in Padang City.

Objective: This research aims to further analyze the dominant factors that influence the implementation of dengue vector control behavior in the One House One Jumantik Movement in Padang City.

Material and Methods: A quantitative research approach was applied using a cross-sectional research design, conducted in Padang City in 2023, involving 99 samples. The sampling in this research was carried out using a proportional sampling technique. The data were collected using a questionnaire instrument through interview techniques. Data analysis used included the Chi-Square test for bivariate analysis and the logistic regression test for multivariate analysis.

Results: The results of the research show that there is a significant relationship between the factors of knowledge, attitude, availability of infrastructure, and the role of larva monitoring coordinator with dengue vector control behavior in the One House One Jumantik movement.

Conclusion: The availability of infrastructure is the dominant factor influencing dengue vector control behavior. It is necessary to design a comprehensive and integrated website-based digital application to improve the health information system and simplify the guidance and supervision efforts that must be carried out so that it can increase the active role of the community in the One House One Jumantik Movement.

Keywords: DHF, Vector Control, Knowledge, Attitudes, Infrastructure, Jumantik coordinator, Dengue.

*Address correspondence to this author at the Social Anthropology Unit, Faculty of Social and Political Sciences, Universitas Andalas, Padang, West Sumatra 25163, Indonesia; E-mail: nursyirwan@soc.unand.ac.id

Cite as: Huvaid S, Effendi N, Lestari Y, Hasmiwati , Afrizal , Machmud R, Irawati N, Sulastri D. Behavior of Controlling the Dengue Disease Vector through the One House One Jumantik Movement in Padang City: A Cross-sectional Study. Open Public Health J, 2024; 17: e18749445313514. http://dx.doi.org/10.2174/0118749445313514240603103844

Received: March 11, 2024
Revised: May 19, 2024
Accepted: May 21, 2024
Published: June 06, 2024

1. INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is a dangerous infectious disease that can cause death in a short time, has social and economic impacts, and has a high epidemic potential [1]. There are at least 500,000 dengue fever sufferers who require hospitalization every year, of which the majority of sufferers are children, and 2.5% of them are reported to have died [2]. The World Health Organization (WHO) estimates that 50 million cases of dengue infection occur in the world every year [3].

The main vector for transmitting dengue fever is the Aedes aegypti mosquito and Ae. Albopictus [4]. The development of fertile vectors in tropical climates has made Indonesia an endemic area for dengue fever [5]. The World Health Organization (WHO) once recorded Indonesia as the country with the highest dengue fever cases in Southeast Asia. The development of dengue fever in Indonesia is very fast. The dengue incidence rate (IR) in 2019 was 51.48 per 100,000 population, showing an increase compared to the previous two years. In 2017 and 2018, the DHF IR was 26.1 and 24.75 per 100,000 population, respectively. Meanwhile, the incidence rate of dengue fever in West Sumatra Province reached 41.59% per 100,000 population [6].

West Sumatra Province has several districts and cities that are classified as endemic areas for dengue fever, including Padang City, Pariaman City, Bukittinggi City, Padang Panjang City, Pesisir Selatan Regency, Tanah Datar Regency, Solok Regency, Sawahlunto City, and Sijunjung Regency. Padang City is the area with the highest dengue fever cases in West Sumatra Province [7]. There is not a single sub-district in Padang City that is free from dengue fever. In 2019, 430 cases were found in all sub-districts in the Puskesmas working area in Padang City [8].

The Aedes aegypti mosquito is the main carrier of dengue fever. Control of this mosquito can be achieved using a variety of methods, from natural approaches to the use of insecticides [9]. However, prolonged use of insecticides can lead to mosquito resistance. Therefore, the main focus is on eradicating Dengue Mosquito Nests to control Aedes aegypti larvae [10].

Dengue mosquito nest eradication is a program that focuses on eliminating or managing Aedes aegypti mosquito nests. This program is considered the spearhead in breaking the chain of dengue transmission and is a government priority that is emphasized to the entire community [11]. Moreover, by prioritizing the eradication of Dengue mosquito nests, and it is hoped that more effective control can be achieved without excessive dependence on insecticides, as well as encouraging active community participation in efforts to prevent this disease [12]. Eradicating mosquito nests is important because it involves applicable actions in eradicating vectors of transmission. Concrete steps taken in eradicating mosquito nests can make a real contribution to preventing the emergence of dengue fever [13].

The “One House One Jumantik Movement” is a policy issued in 2016 by the central government to increase the role of families in controlling the dengue vector [14]. This movement aims to empower the community, especially at the family level, to be able to independently carry out inspections, monitoring, and control of infectious mosquito larvae in their home environment [15].

Community empowerment, in this case, involves providing education, training, and support along with the necessary resources to enable families to take action to prevent the transmission of dengue fever [16]. Actively involving the family is expected to help reduce the risk of dengue fever transmission by controlling the Aedes aegypti mosquito population in the home environment [17].

The One House One Jumantik Movement for dengue vector control requires participation from all levels of society for effective implementation. Despite being initiated in Padang City in 2019, this movement is not yet running optimally. Therefore, this research aims to further analyze the key factors that influence the implementation of dengue vector control behavior in Padang City.

2. MATERIALS AND METHODS

2.1. Study Design

This research was conducted quantitatively by applying a cross-sectional study approach. This design was chosen to identify variables and indicators that have an influence on dengue vector control behavior by jumantik. This approach aims to obtain accurate classification results for the predictions obtained.

2.2. Study Location

The location of quantitative research was carried out at the Padang City Health Service, namely in the working area of the Nanggalo Community Health Center. The working area of this community health center was chosen as the research area because, based on data obtained from the Padang City Health Service in 2022, it was found that the Nanggalo Community Health Center was the best and most routine health center in terms of reporting compared to 23 other community health centers, but still had a low larvae-free rate, namely 80.76% (this figure is lower than the national Larval Free Rate ≥ 95%).

2.3. Population and Sample

2.3.1. Research Population

The population in this study were all mothers/adult family members who lived in the Nanggalo Community Health Center working area, totaling 9,751 families.

2.3.2. Sample

In this research, the sample size was determined using the following Slovin formula [18]

$$n = \frac{N}{N.d^2 + 1}$$

n = Number of samples

N = Total population

d = degree of deviation from the desired population = 10%

$$n = \frac{9.751}{9.751\,(0,1)^2 + 1}$$

n = 98.9

n = 99

The study included 99 families as samples. Proportional sampling was used in this research, which involves selecting subjects from each region while considering the balance of the number of subjects in each region [19]. The number of samples to be taken in each sub-district will be determined by researchers based on the proportion of the total number of samples. The distribution of samples to be taken in each sub-district is shown in Table **1**.

Table 1. Sample distribution per subdistrict.

No.	Subdistrict	Calculation	Sampel (Families)
1	Surau Gadang	5.823 / 9.751 X 99	59
2	Kurao Pagang	3.123 / 9.751 X 99	32
3	Gurun Laweh	805 / 9.751 X 99	8
TOTAL			**99**

After obtaining the number of samples from each sub-district, samples were then selected using a systematic method. Systematic sampling was carried out by taking samples starting from those living to the right of the sub-district office and followed by the number determined in each sub-district.

The sample criteria in this study include the following inclusion and exclusion criteria:

2.3.2.1. Inclusion Criteria

1) Mother/ adult family member

2) Willing to be a respondent

3) Able to communicate well

2.3.2.2. Exclusion Criteria

The respondent was not found in three visits

2.4. Data Collection

Data collection was carried out through research permit procedures in the City of Padang, namely obtaining an introductory research permit from the Public Health Doctoral Study Program, Faculty of Medicine, Andalas University, arranging a research permit from the Department of Investment and One Stop Integrated Services of Padang City, arranging a research permit from the Padang City Health Service, and arrange research permits from the relevant Community Health Centers. After that, it continued with data collection activities related to the dependent variable (dengue vector control behavior) and independent variables, which included knowledge, attitudes, availability of facilities and infrastructure, and the role of larva monitoring coordinator at the research location.

2.5. Research Instrument, Validity and Reliability Test

Furthermore, to gather information about the dependent and independent variables, a questionnaire was used for measurement. This questionnaire has been tested for validity and reliability. The validity test is used to determine the extent to which the measuring instrument accurately measures what it is intended to measure. The questionnaire's validity test assesses the accuracy and precision of the measuring instrument to ensure it can be used with confidence and to identify the correlation between the score of each question and the total score of all respondents [20]. The validity of the questionnaire was assessed using a Bivariate Pearson correlation analysis. The calculated r value is compared with the r table, and if the calculated r is greater than the r table, then the data are considered valid [21]. The results of the validity test of the questionnaire are presented in Table **2**.

Table 2. Test the validity of questionnaire questions.

Variable	Indicator	Question No	r Count	r Table (0,05)	Validity
Dengue Vector Control	Socialization of Mosquito Nest Eradication	B1	0,598	0,334	Valid
	Drain and brush the water reservoir	B2	0,484	0,334	Valid
	Close the water reservoir tightly	B3	0,497	0,334	Valid
	Sprinkling larvicide powder	B4	0,497	0,334	Valid
	Participate in community service	B5	0,652	0,334	Valid
	Cleaning/burying/burning used items	B6	0,437	0,334	Valid
	The habit of hanging clothes in the room	B7	0,474	0,334	Valid
	Using mosquito repellent	B8	0,352	0,334	Valid
	Close the vent	B9	0,579	0,334	Valid
	Monitor mosquito larvae	B10	0,495	0,334	Valid
	Participate in dengue control education	B11	0,557	0,334	Valid
	Mobilize family members to eradicate mosquito nests	B12	0,485	0,334	Valid
	Record larva monitoring results	B13	0,570	0,334	Valid

(Table 2) contd.....

Variable	Indicator	Question No	r Count	r Table (0,05)	Validity
Knowledge	Definition of the One House One Jumantik Movement	C1	0,556	0,334	Valid
	The goal of the One House One Jumantik Movement	C2	0,495	0,334	Valid
	Definition of Mosquito Nest Eradication	C3	0,504	0,334	Valid
	Mosquito Nest Eradication Activities	C4	0,469	0,334	Valid
	The main target of the One House One Jumantik Movement	C5	0,563	0,334	Valid
	Organizational structure of the One House One Jumantik Movement	C6	0,480	0,334	Valid
	Mosquito breeding place	C7	0,397	0,334	Valid
	Prevention of dengue fever in water reservoirs	C8	0,543	0,334	Valid
	Prevention of dengue fever in the bath	C9	0,636	0,334	Valid
	Uses of larvicide powder	C10	0,386	0,334	Valid
	How to prevent dengue fever	C11	0,428	0,334	Valid
	The party responsible for controlling dengue fever	C12	0,557	0,334	Valid
Attitude	DHF must be prevented together	D1	0,735	0,334	Valid
	Mutual cooperation is carried out regularly	D2	0,690	0,334	Valid
	Clean the water reservoir at least once a week	D3	0,570	0,334	Valid
	Water reservoirs need to be closed	D4	0,722	0,334	Valid
	Eradicating mosquito nests is only the government's responsibility	D5	0,766	0,334	Valid
	Water reservoirs are given larvicide powder at least once every 3 – 4 months	D6	0,411	0,334	Valid
	Keeping larvae-eating fish in water reservoirs	D7	0,525	0,334	Valid
	A family member who had a high fever for 3 days was taken to a health facility	D8	0,739	0,334	Valid
	Need to participate in dengue fever control education/activities	D9	0,722	0,334	Valid
	The Larva Monitoring Coordinator provides information about dengue control efforts	D10	0,700	0,334	Valid
Availability of Infrastructure	Availability of Larvae Monitoring cards	E1	0,779	0,334	Valid
	Flashlight availability	E2	0,854	0,334	Valid
	Availability of larvicide powder	E3	0,732	0,334	Valid
The role of the larva monitoring coordinator	Socialization about Mosquito Nest Eradication by the Larvae Monitoring Coordinator	F1	0,800	0,334	Valid
	The Larval Monitoring Coordinator mobilizes to carry out the Eradication of Mosquito Nests	F2	0,729	0,334	Valid
	The Larval Monitoring Coordinator makes home visits and guidance every 2 weeks	F3	0,784	0,334	Valid
	The larva monitoring coordinator makes notes based on the results of monitoring and implementation of mosquito nest eradication on the larva card	F4	0,820	0,334	Valid

In Table **2**, it is shown that as many as 42 question items have r count > r table (0.334), so it can be concluded statistically that the questions are valid (suitable for use as questions in research instruments). After carrying out a validity test, a reliability test is then carried out for each question item. Reliability comes from the word reliability, which means consistency of measurement. Reliability is an instrument used in research to obtain information that can be trusted as a data collection tool and can reveal information that should exist in the field [22]. A questionnaire is said to be reliable if a person's answers to the questions are consistent or stable over time. High and low reliability is empirically indicated by a number called the reliability coefficient. The instrument reliability test here uses the Cronbach's alpha formula [23]. The reliability results of questionnaire items that will be used in this research are shown in Table **3** below.

Based on Table **3**, it can be seen that all indicators for each variable studied have a Cronbach's Alpha value > 0.334, so statistically, this shows that all question items are reliable. Data analysis methods in this research include univariate analysis, bivariate analysis using the chi-square test, and multivariate analysis using the logistic regression test to determine the influence of independent variables together so that it is known which variable is the most dominant.

2.6. Data Analysis

In this research, the quantitative data analysis techniques involve several stages. First, univariate analysis is used to get an overview of the distribution of respondents or variations in the variables studied. Second, bivariate analysis was carried out to test the relationship between the independent variable and the dependent variable using the chi-square test at the 95% confidence level ($p < 0.05$). Furthermore, a multivariate analysis was also performed using a logistic regression test to determine the joint influence of the independent variables. This aims to identify which variables most dominantly influence the intention or intention to implement the One House One Jumantik Movement [18]. Logistic regression statistical tests were conducted by entering independent variables simultaneously according to certain statistical significance criteria ($p < 0.25$) using the Enter method. The largest Exp (B) value then indicates the independent variable that has the most dominant influence on the dependent variable [19].

Table 3. Reliability test of questionnaire questions.

Variable	Indicator	Question No	Cronbach's Alpha	Reliability
Dengue Vector Control	Socialization of Mosquito Nest Eradication	B1	0,733	Reliable
	Drain and brush the water reservoir	B2	0,745	Reliable
	Close the water reservoir tightly	B3	0,747	Reliable
	Sprinkling larvicide powder	B4	0,746	Reliable
	Participate in community service	B5	0,726	Reliable
	Cleaning/burying/burning used items	B6	0,756	Reliable
	The habit of hanging clothes in the room	B7	0,749	Reliable
	Using mosquito repellent	B8	0,760	Reliable
	Close the vent	B9	0,736	Reliable
	Monitor mosquito larvae	B10	0,747	Reliable
	Participate in dengue control education	B11	0,739	Reliable
	Mobilize family members to eradicate mosquito nests	B12	0,746	Reliable
	Record larva monitoring results	B13	0,741	Reliable
Knowledge	Definition of the One House One Jumantik Movement	C1	0,697	Reliable
	The goal of the One House One Jumantik Movement	C2	0,707	Reliable
	Definition of Mosquito Nest Eradication	C3	0,708	Reliable
	Mosquito Nest Eradication Activities	C4	0,705	Reliable
	The main target of the One House One Jumantik Movement	C5	0,693	Reliable
	Organizational structure of the One House One Jumantik Movement	C6	0,712	Reliable
	Mosquito breeding place	C7	0,729	Reliable
	Prevention of dengue fever in water reservoirs	C8	0,696	Reliable
	Prevention of dengue fever in the bath	C9	0,681	Reliable
	Uses of larvicide powder	C10	0,713	Reliable
	How to prevent dengue fever	C11	0,709	Reliable
	The party responsible for controlling dengue fever	C12	0,695	Reliable
Attitude	DHF must be prevented together	D1	0,822	Reliable
	Mutual cooperation is carried out regularly	D2	0,827	Reliable
	Clean the water reservoir at least once a week	D3	0,840	Reliable
	Water reservoirs need to be closed	D4	0,823	Reliable
	Eradicating mosquito nests is only the government's responsibility	D5	0,818	Reliable
	Water reservoirs are given larvicide powder at least once every 3 – 4 months	D6	0,866	Reliable
	Keeping larvae-eating fish in water reservoirs	D7	0,842	Reliable
	A family member who had a high fever for 3 days was taken to a health facility	D8	0,821	Reliable
	Need to participate in dengue fever control education/activities	D9	0,825	Reliable
	The Larva Monitoring Coordinator provides information about dengue control efforts	D10	0,826	Reliable
Availability of Infrastructure	Availability of Larvae Monitoring cards	E1	0,614	Reliable
	Flashlight availability	E2	0,430	Reliable
	Availability of larvicide powder	E3	0,734	Reliable
The role of the larva monitoring coordinator	Socialization about Mosquito Nest Eradication by the Larvae Monitoring Coordinator	F1	0,674	Reliable
	The Larval Monitoring Coordinator mobilizes to carry out the Eradication of Mosquito Nests	F2	0,715	Reliable
	The Larval Monitoring Coordinator makes home visits and guidance every 2 weeks	F3	0,787	Reliable
	The larva monitoring coordinator makes notes based on the results of monitoring and implementation of mosquito nest eradication on the larva card	F4	0,646	Reliable

3. RESULTS

Univariate analysis in this study aims to see a picture of the frequency distribution of the variables studied, namely the dependent variable (dengue vector control) and independent variables (including knowledge, attitudes, availability of infrastructure, and the role of the jumantik coordinator). The frequency distribution table for each variableis shown below.

Based on Table **4**, it can be observed that 62.2% of respondents were not good at implementing dengue vector control behavior. Meanwhile, the independent variables describe that 58.6% of respondents have low knowledge, 53.5% of respondents have a negative attitude, 61.6% of respondents stated that the availability of facilities and infrastructure is in the poor category, and 59.6% of respondents stated that the jumantik coordinator does not play a role.

Moreover, to determine the relationship between two variables, specifically one independent variable and one dependent variable, researchers use bivariate analysis. In this study, the bivariate analysis employed was the Chi-square test. Each categorized independent and dependent variable, including knowledge, attitude, availability of infrastructure, and the role of the jumantik coordinator, was tested to determine whether there was a relationship with the dependent variable of dengue vector control. If the p-value is less than or equal to 0.05, then the research hypothesis is accepted. The results of the bivariate analysis are presented in Table 5.

Based on the results of a cross-tabulation between knowledge and dengue vector control, the data were obtained that showed 16 (27.6%) respondents with low knowledge who effectively carried out efforts to control dengue vectors, while among respondents with high knowledge, 21 (51.2%) made good efforts to control dengue vectors. The statistical test results yielded a p-value of 0.029 (≤ 0.05), indicating a significant relationship between knowledge and dengue vector control. The analysis also revealed an odds ratio (OR) value of 2.7, meaning that respondents with high knowledge had a 2.7 times greater chance of effectively carrying out dengue vector control efforts compared to those with low knowledge.

The cross-tabulation showed that 14 (26.4%) respondents had a negative attitude towards dengue vector control, while 23 (50%) of those with a positive attitude made good efforts to control dengue vectors. The

Table 4. Univariate analysis results.

No.	Variable	Category	f	%
1	Dengue Vector Control	Not good	62	62.2
		Good	37	37.4
2	Knowledge	Low	58	58.6
		High	41	41.4
3	Attitude	Negative	53	53.5
		Positive	46	46.5
4	Availability of Infrastructure	Not good	61	61.6
		Good	38	38.4
5	The role of the larva monitoring coordinator	Less Role	59	59.6
		Play a role	40	40.4

Table 5. Bivariate analysis results.

No.	Variable	Dengue Vector Control				Total		p-value	OR
		Not Good		Good					
		f	%	f	%	f	%		
1	**Knowledge**								
	Low	42	72.4	16	27.6	58	100	0.029	2.7 (1.1 - 6.3)
	High	20	48.8	21	51.2	41	100		
2	**Attitude**								
	Negative	39	73.6	14	26.4	53	100	0.027	2.7 (1.2 - 6.4)
	Positive	23	50.0	23	50.0	46	100		
3	**Availability of Infrastructure**								
	Not good	47	77	14	23	61	100	0.0001	5.1 (2.1 - 12.4)
	Good	15	39.5	23	60.5	38	100		
4	**The role of the larva monitoring coordinator**								
	Less Role	44	74.6	15	25.4	59	100	0.006	3.5 (1.5 - 8.4)
	Play a role	18	45	22	55	40	100		

Table 6. Multivariate analysis results.

No.	Variable	Exp (B)	95% CI for Exp(B)		Sig
			Lower	Upper	
1	Attitude	2.950	1.141	7.627	0.026
2	Availability of Infrastructure	4.023	1.574	10.283	0.004
3	The role of the larva monitoring coordinator	3.290	1.266	8.550	0.015

statistical test resulted in a p-value of 0.027 (≤ 0.05), indicating a significant relationship between attitude and dengue vector control. The analysis also revealed an odds ratio (OR) of 2.7, meaning that respondents with a positive attitude were 2.7 times more likely to make good efforts to control the dengue vector compared to those with a negative attitude.

Based on the results of cross-tabulation between the availability of infrastructure and dengue vector control, data was obtained that there were 14 (23%) respondents who stated that the availability of infrastructure was not good enough to carry out efforts to control dengue vectors well. Meanwhile, among respondents who stated that the infrastructure was good, 23 (60.5%) made good efforts to control dengue vectors. The statistical test results obtained a p-value = 0.0001 (≤ 0.05), so it can be concluded that there is a significant relationship between the availability of infrastructure and dengue vector control. From the results of the analysis, an OR value of 5.1 was also obtained, meaning that respondents who stated that the infrastructure was available had a 5.1 times chance of making efforts to control dengue vectors well compared to respondents who stated that the infrastructure was not available.

The analysis of the relationship between the role of the jumantik coordinator and dengue vector control revealed that 15 respondents (25.4%) felt that the jumantik coordinator did not sufficiently contribute to effective dengue vector control efforts. On the other hand, 22 respondents (55%) who believed that the larva monitoring coordinator played a good role actively participated in dengue vector control efforts. The statistical test resulted in a p-value of 0.006 (≤ 0.05), indicating a significant relationship between the role of the jumantik coordinator and dengue vector control. Furthermore, the analysis produced an odds ratio (OR) of 3.5, signifying that respondents who perceived the jumantik coordinator as playing a good role were 3.5 times more likely to engage effectively in dengue vector control efforts compared to those who viewed the jumantik coordinator role as poor.

Multivariate analysis identified that from the factors of knowledge, attitude, availability of infrastructure, and the role of the jumantik coordinator, it turns out that the availability of infrastructure is the dominant factor influencing behavior in controlling the dengue vector with a p-value = 0.004. The results of the multivariate analysis are shown in Table **6**.

4. DISCUSSION

The results of this study show that there is a significant relationship between the knowledge variable and dengue vector control behavior. These findings support the hypothesis that good knowledge about dengue fever positively influences individual behavior in controlling this disease vector. The correlation can be explained by the assumption that good knowledge about dengue fever can increase individual awareness about the importance of prevention and control measures against the vector.

Knowledge or cognition is a very important domain in shaping a person's actions (overt behavior) [21]. Without knowledge, a person has no basis for making decisions and determining actions regarding the problems faced. Knowledge is a cognitive process of a person or individuals to give meaning to the environment so that each individual gives their meaning to the environment so that each individual gives their meaning to the stimuli they receive even though the stimuli are the same [24].

Furthermore, these findings have important practical implications in efforts to prevent and control dengue fever. Public health programs can use this information to design more effective interventions to increase public knowledge about dengue and encourage the adoption of better disease vector control behaviors.

Statistical analysis also shows that a positive attitude towards dengue fever is significantly related to dengue vector control behavior. This means that individuals who have a positive attitude towards dengue fever tend to be more active in taking preventive and control measures against this disease vector.

Attitude refers to a person's immediate reaction or response to a specific stimulus or object, which already incorporates relevant opinions and emotional factors (such as happy-displeased, agree-disagree, good-bad, *etc*.). Newcomb, a social psychologist, stated that attitude is the readiness or willingness to act rather than the implementation of specific motives [21]. Attitude is not yet an action or activity but rather a predisposition to behavior. This attitude represents a closed reaction, not an open reaction or behavior [25].

Several factors can explain the relationship between attitudes and behavior in this context. First, individuals with positive attitudes towards dengue fever are more motivated to protect themselves and their environment from the disease. A positive attitude can create an internal drive to act proactively in controlling the dengue vector [26].

Positive attitudes towards dengue fever may also reflect a higher level of awareness and knowledge about the disease [27]. Individuals who understand the impact and risks of dengue fever are more likely to adopt effective disease vector control behaviors. A comprehensive approach that takes into account aspects of attitude, knowledge, behavior can be a strong foundation for a successful dengue control strategy.

In this research, it was found that there was a significant relationship between the variable availability of infrastructure and dengue vector control behavior [28]. These findings indicate that the availability of adequate infrastructure influences individual behavior in controlling the disease vector. Availability of infrastructure in this context refers to individual accessibility to facilities and resources that support efforts to control the dengue vector.

Individuals who have adequate infrastructure tend to be more likely to adopt prevention and control behavior against the dengue vector. The availability of adequate infrastructure can make it easier for individuals to take vector control measures. Situations that are well organized and equipped with adequate infrastructure tend to be better able to control the spread of disease vectors such as the Aedes aegypti mosquito [28].

This research also shows that there is a significant relationship between the variable role of larva monitoring coordinator and dengue vector control behavior. The role of larva monitoring coordinators refers to their function and interaction in providing information, services, or interventions related to controlling dengue vectors in the community. This includes activities such as counseling, coaching, monitoring, and supervision.

The results of the analysis show that the role of the larva monitoring coordinator influences dengue vector control behavior. This indicates that when larva monitoring coordinators are active and effective in carrying out their duties in providing information and services related to dengue fever to the community, prevention and control behavior for this disease vector tends to increase among affected individuals [29].

Several mechanisms can explain this relationship. First, the active role of larva monitoring coordinators in providing accurate and relevant information about dengue fever can increase public knowledge and awareness about dengue fever and the control efforts they need to take. Better knowledge can certainly encourage people to adopt more effective prevention behavior [24]. In addition, positive interactions between larva monitoring coordinators and the community can build trust and support for efforts to control the dengue vector. When the community feels supported and monitored by the coordinator, they will be more likely to follow the advice and recommendations given, as well as carry out the recommended actions to prevent dengue transmission [28].

The results of this research have important implications for the development of dengue fever prevention and control programs. Supporting the role of larva monitoring coordinators in providing quality and supportive services to the community can be an effective strategy for improving dengue vector control behavior [30].

Multivariate analysis in this study shows that the availability of facilities and infrastructure is the most dominant factor in influencing dengue vector control behavior compared to knowledge, attitudes, and the role of the larva monitoring coordinator.

The findings of this analysis confirm that the presence of facilities and infrastructure significantly affects dengue vector control behavior, even when accounting for other variables such as knowledge, attitudes, and the involvement of health workers. This demonstrates that access to infrastructure strongly influences the adoption of dengue vector prevention and control behavior within the community [28].

Although knowledge about dengue fever, positive attitudes towards the disease, and the role of larva monitoring coordinator were also proven to have a significant relationship with dengue vector control behavior, multivariate analysis showed that the availability of facilities and infrastructure had a greater influence in predicting this behavior. The results of this multivariate analysis imply that in planning dengue prevention strategies and interventions, special attention needs to be given to efforts to increase the availability of facilities and infrastructure that support the control of dengue vectors.

The One House One Larvae Monitoring Movement is a Ministry of Health program that has been promoted since 2016, however, for the City of Padang, the Mayor's Decree regarding this movement was only established in 2019. Since it was established, the One House One Jumantik Movement in Padang City has not been running as it should. This movement requires the activeness of larvae monitors to carry out their main tasks and functions according to the provisions. For this reason, it is necessary to carry out coaching and supervision efforts by the coordinators. However, with several obstacles still existing, such as large area coverage, a small number of active cadres, and limited resources available, it is necessary to prepare infrastructure in the form of a website-based digital application that is designed to be comprehensive and integrated to improve the health information system to improve the performance of larvae monitors in the One House One Jumantik Movement.

This application was designed to simplify the guidance and supervision efforts that must be carried out by each party so that dengue vector control behavior in the One House One Jumantik Movement can run more effectively and integrated with website-based and it is hoped that it can minimize the time and costs involved must be removed.

CONCLUSION

This research shows that there is a significant relationship between knowledge, attitudes, availability of infrastructure, and the role of the jumantik coordinator in dengue vector control behavior. However, based on multivariate analysis, it is known that the availability of infrastructure is the most dominant factor influencing this behavior. Therefore, it is necessary to design a comprehensive and integrated website-based digital application to improve the health information system and simplify the guidance and supervision efforts that must be carried out to increase the active role of the community in the One House One Jumantik Movement.

LIST OF ABBREVIATIONS

Jumantik	=	Mosquito Larva Monitor
WHO	=	World Health Organization
OR	=	Odds Ratio

AUTHORS’ CONTRIBUTION

It is hereby acknowledged that all authors have accepted responsibility for the manuscript's content and consented to itssubmission. They have meticulously reviewed all results and unanimously approved the final version of the manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The research was conducted after obtaining approval from the Research Ethics Commission of the Faculty of Medicine, Andalas University. The approval number is No. 790/UN.16.2/KEP-FK/2022, dated 21 June 2022.

HUMAN AND ANIMAL RIGHTS

All research procedures were carried out on human participants and were conducted in accordance with the ethical standards of the institution and research committee, as well as the principles of the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

The study involved the preparation of an informed consent form to protect both the respondents and the researchers.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of this study is available in the zenodo repository https://zenodo.org/records/11488409.

FUNDING

This study was funded by Baiturrahmah Education Foundation (Awards/Grant number: 194/SK/UNBRAH/VII/2023).

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

ACKNOWLEDGEMENTS

Declared none.

REFERENCES

[1] Chamsi H. Analysis of the Economic Value of Dengue Fever in Urban Areas: Case Study in Banda Aceh. Universitas Syiah Kuala 2015. Electronic Theses and Dissertations (ETD). Available from: https://etd.usk.ac.id/index.php/index.php?p=baca&bacaID=15137&page=1

[2] Arie R. Community Efforts to Prevent Dengue Hemorrhagic Fever in Bergas Lor Village, Bergas District, Semarang Regency. Semarang: Universitas Negeri Semarang 2019. UNNES Repository. Available from: http://lib.unnes.ac.id/id/eprint/40228

[3] Dengue and severe dengue. WHO Fact Sheet 2014; 117: 1-4. UNNES Repository. Available from: https://applications.emro.who.int/dsaf/emropub_2014_EN_1629.pdf

[4] Hendri J, Santya RNRE, Prasetyowati H. Distribution and density of dengue hemorrhagic fever (DHF) vector based on the altitude in ciamis west java ciamis. Jurnal Ekologi Kesehatan 2015; 14: 17-28. ResearchGate. Available from: https://www.researchgate.net/publication/313087968 http://dx.doi.org/10.22435/jek.v14i1.4654.17-28

[5] Harapan H, Michie A, Mudatsir M, Sasmono RT, Imrie A. Epidemiology of dengue hemorrhagic fever in Indonesia: Analysis of five decades data from the National Disease Surveillance. BMC Res Notes 2019; 12(1): 350. http://dx.doi.org/10.1186/s13104-019-4379-9 PMID: 31221186

[6] Kemenkes RI. Profil Kesehatan Indonesia 2019. Jakarta. 2020. Available from: https://www.kemkes.go.id/id/profil-kesehatan-indonesia-2019 http://dx.doi.org/10.5005/jp/books/11257_5

[7] Profil Dinas Kesehatan Sumatera Barat Tahun 2017. Padang 2018. Available from: https://dinkes.sumbarprov.go.id/details/news/330

[8] Profil Kesehatan Dinas Kesehatan Kota Padang Tahun 2019. Padang. 2020. Available from: https://dinkes.padang.go.id/profil-kesehatan-tahun-2019

[9] Purnama SG. Pengendalian Vektor. Bali: Universitas Udayana 2017. Available from: https://simdos.unud.ac.id/uploads/file_pendidikan_dir/22d82a3dbab6e380e1aaf347e86dc055.pdf

[10] Prasetyowati H, Astuti E P, Ruliansyah A. Use of household insecticides in controlling aedes aegypti populations in endemic dengue hemorrhagic fever (DBD) Areas in East Jakarta. J Vector Borne Dis Stud 2016; 8(1): 29-36. ResearchGate. Available from: https://www.researchgate.net/publication/313773709 http://dx.doi.org/10.22435/aspirator.v8i1.4330.29-36

[11] Kemenkes RI. Strategi Nasional Penanggulangan Dengue 2021-2025. Jakarta: Kementerian Kesehatan RI 2021. Available from: https://p2p.kemkes.go.id/strategi-nasional-penanggulangan-dengue-2021-2025/.

[12] Lesmana SD, Susanty E, Afandi D. One house one jumantik movement (SARUJU) in pelita medika ii buluh cina village, Kampar Regency. ETHOS 2020; 8(1): 5249. Available from: https://ejournal.unisba.ac.id/index.php/ethos/article/view/5249. http://dx.doi.org/10.29313/ethos.v8i1.5249

[13] Rahmania NA, Indriyani R. Mosquito nest eradication action (PSN) and 3M-plus as vector control efforts in preventing dengue hemorrhagic fever. J Health Aromedicine 2018; 5(1): 524-8.

[14] Lesmana O, Halim R. Description of the Density Level of Aedes Aegypti Mosquito Larvae in Kenali Asam Bawah Subdistrict, Jambi City. Jambi Public Health Journal 2020; 4(2): 10571. Available from: https://online-journal.unja.ac.id/jkmj/article/view/10571. http://dx.doi.org/10.22437/jkmj.v4i2.10571

[15] Kemenkes RI. Technical Instructions for Implementing PSN 3M-PLUS with the One House One Jumantik Movement. Jakarta: Directorate General of Disease Control and Environmental Health 2016. Available from: https://www.jumantik.org/images/book/Juknis_1_Rumah_1_Jumantik.pdf.

[16] Sari RK, Djamaluddin I, Djam'an Q, Sembodo T. Community empowerment in efforts to prevent dengue hemorrhagic fever at the Karangdoro health center. ABDIMAS-KU Journal: Medical Community Service Journal 2022; 1(1): 25. Available from: https://jurnal.unissula.ac.id/index.php/abdimasku/article/view/19850. http://dx.doi.org/10.30659/abdimasku.1.1.25-33

[17] Selviana S, Suwarni L. The effectiveness of the health promotion model through video media implementing G1R1J in increasing larvae-free rates. Scientific Journal of Health Sciences: Health Insights 2019; 5(2): 143-9. ResearchGate. Available from: https://www.researchgate.net/publication/330841000. http://dx.doi.org/10.33485/jiik-wk.v5i2.116

[18] Sugiyono . Quantitative, Qualitative, and R&D Research Methods. Alphabeta, Bandung 2016. SCRIBD. Available from: https://www.scribd.com/document/391327717/Buku-Metode-Penelitian-Sugiyono.

[19] Muhyi M. Metodologi Penelitian. Surabaya: Adi Buana University Press 2018. Repository UMI. Available from: https://repository.umi.ac.id/1989/2/Metodologi%20Penelitian%20Kuantitatif.pdf.

[20] Saifuddin A. Human Attitude Theory and Measurement. Yogyakarta: Pustaka Pelajar 2015. Available from: https://scholar.google.co.id/scholar?hl=en&as_sdt=0,5&cluster=813083382765286381.

[21] Soekidjo N. Health Behavior Science. Jakarta: Rineka Cipta 2018. Available from: https://scholar.google.co.id/scholar?hl=en&as_sdt=0,5&cluster=2802009801971961444.

[22] Research Validity and Reliability. Jakarta: Mitra Wacana Media 2018. Available from: https://core.ac.uk/download/pdf/187726085.pdf

[23] Gisely V. Quantitative Research Methodology Module: Research Instruments. Jakarta: Esa Unggul University 2020. Available from: https://lms-paralel.esaunggul.ac.id/pluginfile.php?file=/431100/mod_resource/content/1/11_7211_KMS361_062020.pdf

[24] Monintja Tyrsa CN. The relationship between individual characteristics, knowledge and attitudes and community dengue PSN actions, malalayang I village, malalayang district, manado city. JIKMU 2015; 5(2) Available from: https://ejournal.unsrat.ac.id/index.php/jikmu/article/view/7859.

[25] Retang P A U, Salmun J A R, Setyobudi A. The relationship between behavior and the incidence of dengue hemorrhagic fever in the bakunase health center working area, kupang city. Public Health Media 2020; 3(1) Available from: https://ejurnal.undana.ac.id/index.php/MKM/article/view/2895.

[26] Harahap AR. The Relationship between Individual Characteristics, Environmental Factors and Behavior with the Incidence of Dengue Hemorrhagic Fever in the Working Area of the Tanjung Marulak Community Health Center, Tebing Tinggi City. Medan: Universita Islam Negeri Sumatera Utara 2021. Repository UINSU. Available from: http://repository.uinsu.ac.id/13420/.

[27] Putra AAYM. Overview of Knowledge, Attitudes and Practices in Handling DHF in the South Kuta Community Health Center Work Area. Denpasar: Bali Institute of Technology and Health 2021. ITIKES Bali Repository. Available from: https://repository.itekes-bali.ac.id/journal/detail/845/.

[28] Nastiti SA. Factors Associated with the Occurrence of Dengue Hemorrhagic Fever (DHF) in the Klagenserut Community Health Center Working Area. Madiun: Stikes Bhakti Husada Mulia 2021. Eprints Repository Software. Available from: https://repository.stikes-bhm.ac.id/1224/.

[29] Putri YD. DHF Prevention Efforts by Larvae Monitoring Officers (Jumantik) and Their Relationship with Larvae Free Rates in the Working Area of the Rawa Buntu Community Health Center, South Tangerang City in 2016. Jakarta: Universitas Islam Negeri Syarif Hidayatullah 2017. Repository UIN Syarif Hidayatullah. Available from: https://repository.uinjkt.ac.id/dspace/handle/123456789/35057.

[30] Porogoi VD, Kaunang WPJ, Mantjoro EM. The relationship between the role of larval monitors and family behavior in eradicating dengue hemorrhagic fever mosquito nests in ranotana weru village. KESMAS Journal 2019; 8(6) Available from: https://ejournal.unsrat.ac.id/v3/index.php/kesmas/article/view/25760.