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RESEARCH ARTICLE

Effectiveness of Larva Monitoring Student Empowerment in Mosquito Nests Eradication Efforts in Rapoccini Sub-District, Makassar City

Susanly Ainun Handoko[1*], Hasanuddin Ishak[2], Syamsuar Manyullei[3], Anwar Daud[4], Isra Wahid[5], Muhammadong[6]

[1] Master of Public Health Program, Faculty of Public Health, Hasanuddin University

[2,3,4] Department of Environmental Health, Faculty of Public Health, Hasanuddin University

[5] Department of Parasitology, Faculty of Medicine, Hasanuddin University

[6] South Sulawesi Provincial Health Office

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***Corresponding Author:**

handokosusanly@gmail.com

ABSTRACT

Dengue hemorrhagic fever (DHF) is a disease caused by dengue virus transmission through Aedes Aegypti mosquito. Therefore, it requires the role of various levels of society in Mosquito Nests Eradication (PSN) efforts, one of which is the Empowerment of Larva Monitoring Students. The purpose of this study was to determine the effectiveness of Larva Monitoring Students based on knowledge, attitudes and actions and the presence of Ae. Aegypti in the respondent's living environment. The method used was Quasi Experimental Two Group pre-posttest design. Sampling using Purposive Sampling technique, namely students at SMPN 49 Makassar as an intervention group and students of SMPN 21 Makassar as a control group with a total of 60 respondents. The results showed Larvae monitoring training and counseling on dengue and mosquito nests eradication efforts significantly reduced the presence of Ae. Aegypti larva and the influence of knowledge, attitudes and actions of respondents with the presence of larvae, with a p value <0.005, while for the influence of the presence of larvae monitoring students with the knowledge of family members, the p value> 0.05. Conclusion: There is an effect of the presence of students monitoring larvae with the presence of Aedes Aegypti larvae, there is an effect of knowledge, attitudes and actions of respondents with the presence of Aedes Aegypti larvae. However, there was no effect of the presence of student larva monitors on the knowledge of family members about dengue fever and efforts to eradicate dengue mosquito nests.

1. INTRODUCTION

Dengue hemorrhagic fever (DHF) is one of the infectious diseases that still threatens the health of the Indonesian people. The disease caused by the dengue virus can cause acute fever which is transmitted through the bite of Aedes mosquitoes infected with the dengue virus. In 2019, the dengue morbidity rate was 59.02 per 100,000 population. This number climbed and peaked in 2015 at 65.7 per 100,000 population. The following year the rate declined rapidly to 27.67 per 100,000 population. The morbidity rate rose again the following year to 37.23 per 100,000 population. In 2017, the dengue morbidity rate reached 50.75 per 100,000 population (Ministry of Health, 2019).

One of the areas in South Sulawesi with a high number of cases is Makassar City. In 2019 there were 268 cases, decreased in 2020 to 175 cases and increased in 2021 by 583 cases. One of the sub-districts with the highest cases came from Rapoccini sub-district (Makassar City Health Office, 2021). Although in 2020 the number of DHF cases decreased, regionally DHF cases increased in the

following year, one of which was the province of South Sulawesi. Based on the morbidity rate (IR) of DHF per 100,000 population by province, South Sulawesi ranked 21st in 2018 with an IR of 24.10 and in 2019 it ranked 30th with an IR of 36.89. Meanwhile, in 2020 the IR was 31.00 (Indonesian Ministry of Health, 2020). Based on the number of cases in 2019 amounting to 3,745 cases, 25 cases died. In 2020 it decreased by 2,729 cases, died 26 cases and experienced an increase in 2021 of 3,585 cases, died 35 cases (Makassar City Health Office, 2022).

Various efforts have certainly been made by the government and related institutions in reducing the incidence of DHF. Efforts that can be made are controlling DHF by breaking the chain of development of the DHF vector, namely the Aedes mosquito. This can be done early in the larval phase by eradicating mosquito nestss with 3M Plus activities. This effort can be carried out by various parties in collaboration with various institutions or related sectors. One of them is by collaborating with schools and health centers by forming larvae monitors in the school environment or called Simantik (Wahiddin, 2021). (Wahiddin, 2021).

These larvae monitoring students themselves have a role as part of suerveilance, preventive and promotive. With the provision and knowledge that has been obtained, students are expected to be able to control and educate in the mosquito nests eradication program. What can be done is by disseminating information and education in the school environment and where they live. This is in accordance with the duties of students who monitor larvae according to the 2015 technical guidelines, namely as a mobilizer and motivator for families and in their school environment (Kemenkes RI, 2014).

METHODS

The type of research used is quantitative with a survey method and a quasi-experimental approach with a nonrandomized control group prest-posttest design that compares the intervention group and the control group. After a predetermined amount of time, a post-test was conducted on both groups, which had initially been tested first (Creswell, 2013).

Table 1: Quasi experiment research study design

	Pre-test	**Treatment**	***Post-test***
Intervention Group	01	X	02
Control Group	03	-	04

Description:

01, 03: Observation with Larva density measurement and questionnaire filling before intervention

X: Treatment with the intervention of training students as larvae monitors.

02, 04: Observation by measuring larvae density and filling out questionnaires after intervention

This research was conducted in Rapoccini sub-district for 3 months from march until June 2023. The sampling technique used Purposive Sampling technique. This technique is sampling with certain considerations in accordance with the criteria desired by the researcher in determining the number of samples to be studied (Sugiyono, 2018). Where the research sample is second grade junior high school students at 49 Junior high school state (SMPN 49 Makassar) as the Intervention group and 49 Junior high school state (SMPN 21 Makassar) as the control group with the same number of samples in each group, namely 30 respondents. A pre-test was conducted by filling out a questionnaire to measure knowledge, attitudes and actions, as well as the density of Ae. Aegypti larvae density. After the intervention, a post-test was conducted with the same measures. The instruments used were questionnaires, guidebooks for monitoring larvae, larvae monitoring tools and checklists.

RESULTS

Univariate analysis

Table 2: Distribution of Ae. Aegypti larvae based on the type of container in the respondent's house before and after the intervention in the intervention group.

No	**Container Type**	**Container positive for Ae. Aegypti**	
		Pre	**Post**

		n	Positive	%	n	Positive	%
1	Bathtub	33	4	1.70	33	0	0.00
2	Animal drinking place	2	0	0.00	2	0	0.00
3	Basin	13	5	2.10	13	0	0.00
4	Bucket	68	22	9.40	69	0	0.00
5	Dispenser container	33	21	8.90	31	1	0.45
6	Flower vase	16	5	2.10	16	0	0.00
7	Pond/aquarium	3	0	0.00	3	0	0.00
8	Used items	66	22	9.40	53	0	0.00
Total		**235**	**79**	**33.60**	**222**	**1**	**0.45**

Source: Primary data, 2023

Based on table 2, it shows that the container where the most larvae were found was in the bucket shelter with a percentage of 9.40% of 79 positive containers with a total of 235 containers examined.

Table 3: Distribution of Ae. Aegypti larvae distribution by container type in Respondents' houses before and after the intervention in the control group

No	Container Type	Container positive for Ae. Aegypti					
		Pre			Post		
		n	Positive	%	n	Positive	%
1	Bathtub	36	7	2.60	34	3	1.20
2	Animal drinking place	7	1	0.40	7	1	0.40
3	Basin	19	14	5.10	19	14	5.60
4	Bucket	76	35	13.00	76	32	13.00
5	Dispenser container	35	17	6.20	35	17	6.90
6	Flower vase	25	8	2.90	25	8	3.20
7	Pond/aquarium	10	4	1.50	10	4	1.60
8	Used items	65	29	11.00	42	11	4.40
Total		**273**	**115**	**42.00**	**248**	**90**	**36.00**

Source: Primary data, 2023

Based on table 3, it can be seen that the highest number of containers positive for larvae is in buckets and used goods. At the end of the observation, the number of containers decreased, namely in the number of bathtubs and used goods with a decrease of 6.00%.

Table 4: Container Index (CI) values before and after the intervention on dengue fever and its eradication efforts in the intervention group.

Observation		Container checked	Container positive of larvae	Container Index (CI)
Intervention group	First Week	235	79	33.62
	Second Week	233	66	28.32
	Third Week	231	53	22.94
	Fourth Week	231	44	19.04
	Fifth Week	230	28	12.17
	Sixth Week	228	23	10.09
	Seventh Week	223	12	5.38
	Eight Week	223	9	4.03
	Ninth Week	222	4	1.8
	Tenth Week	222	3	1.35
	Eleventh Week	222	1	0.45
	Twelfth Week	222	1	0.45

Source: Primary data, 2023

Based on table 4, the initial observation of the number of containers was 235 containers with positive containers as much as 33.62% and then decreased in the last observation with a CI value of 0.45%. The percentage decrease in CI is 98.66% from the initial observation.

Table 5: Container Index (CI) values before and after the intervention on dengue fever and its eradication efforts in the control group.

Observation		Container checked	Container positive of larvae	Container Index (CI)
Control group	First Week	273	115	42.12
	Second Week	269	115	42.75
	Third Week	267	111	41.57
	Fourth Week	231	111	40.68
	Fifth Week	263	107	39.54
	Sixth Week	263	104	39.54
	Seventh Week	263	104	39.54
	Eight Week	259	102	38.78
	Ninth Week	259	100	38.61
	Tenth Week	259	100	38.61
	Eleventh Week	259	100	38.61
	Twelfth Week	254	91	35.82

Source: Primary data, 2023

Based on table 5 there are 115 positive containers of 273 containers with a CI value of 42.12. Then in the final observation there were 91 positive containers of 254 containers with a CI value of 35.82. When viewed from the CI results at the beginning of the observation to the end of the observation, positive containers for larvae only decreased for 14.95%.

Table 6: House Index (HI) values before and after the intervention on DHF and its eradication efforts in the intervention group

Observation		House inspected	House positive for larvae	House Index (HI)
Intervention Group	First Week	30	30	100
	Second Week	30	28	93,33
	Third Week	30	24	80,00
	Fourth Week	30	23	76,67
	Fifth Week	30	15	50,00
	Sixth Week	30	13	43,33
	Seventh Week	30	8	26,67
	Eight Week	30	6	20,00
	Ninth Week	30	3	10,00
	Tenth Week	30	2	6,67
	Eleventh Week	30	1	3,33
	Twelfth Week	30	1	3,33

Source: Primary data, 2023

Based on table 6, it can be seen that the number of houses examined was 30 houses, with a HI value of 100% at the initial observation, then decreased the HI value by 6.67% in the second week of observation. The decline began to be low in the seventh week of observation where the positive house for larvae was 8 houses with an HI value of 26.67% and in the eleventh and twelfth week of observation the positive house for larvae was only one house with an HI value of 3.33%.

Table 7: House Index (HI) values before and after the intervention on DHF and its eradication efforts in the control group

Observation		House inspected	House positive for larvae	House Index (HI)
Control Group	First Week	30	30	100
	Second Week	30	30	100
	Third Week	30	30	100
	Fourth Week	30	30	100
	Fifth Week	30	28	93,33
	Sixth Week	30	28	93,33

	Seventh Week	30	28	93,33
	Eight Week	30	28	93,33
	Ninth Week	30	28	93,33
	Tenth Week	30	28	93,33
	Eleventh Week	30	28	93,33
	Twelfth Week	30	28	93,33

Source: Primary data, 2023

Based on table 7, it can be seen that the number of houses examined was 30 houses with a total of 30 positive houses or with a HI value of 100%. The HI value changed in week five, where out of 30 houses there were 28 positive houses with a decrease of 6.67 with a HI value of 93.33% until the 12th week of observation.

Table 8: Distribution of knowledge, attitudes and actions of respondents before and after the intervention of PSN efforts in the intervention group

Variable		**Pre-Test**		**Post-Test**	
		n	**%**	**n**	**%**
Knowledge	Good	2	6,70	29	96.70
	Less	28	93,30	1	3,30
Attitude	Positive	1	3,30	29	96.70
	Negative	29	96,70	1	3.30
Action	Good	1	3,3	29	96.7
	Less	29	96,7	1	3.3

Source: Primary data, 2023

Based on table 8 for knowledge, attitudes and actions have increased after the post-test. Respondents' knowledge in the pre-test, namely 28 respondents (93.30%) were less knowledgeable, then increased in the post-test with the number of respondents with good knowledge, namely 29 respondents (96.70%). For attitudes and actions, the same value was increased, namely in the pre-test respondents who had a negative attitude and lack of action were 29 respondents (96.70%) and then changed to 29 respondents (96.7%) having a positive attitude and good actions regarding DHF and mosquito eradication efforts.

Table 9: Distribution of knowledge, attitudes and actions of respondents before and after the intervention of PSN efforts in the control group

Variable		**Variable**		**Post-Test**	
		n	**%**	**n**	**%**
Knowledge	Good	1	3,30	10	33,30
	Less	29	96,70	20	66,70
Attitude	Positive	1	3,30	2	6,70
	Negative	29	96,70	28	93,30
Action	Good	1	3,3	2	6,7
	Less	29	96,7	28	93,3

Source: Primary data, 2023

Based on Table 9, the knowledge of respondents increased after the post-test. Respondents' knowledge in the pre-test was 29 respondents (96.70%) with less knowledge, then increased in the post-test with the number of respondents with good knowledge, namely 10 respondents (33.30%). For attitudes and actions did not experience a significant increase, where respondents who had negative attitudes and lack of action were 29 respondents (96.70%) and in the post-test as many as 28 respondents (93.30%) had negative attitudes.

Table 10: Distribution of respondent family members' knowledge about DHF and its eradication efforts in the intervention and control groups.

Intervention group	**Knowledge**	***Pre-Test***		***Post-Test***	
		n	**%**	**n**	**%**
	Good	**6**	**20.00**	**18**	**60.00**

	Less	**24**	**80.00**	**12**	**40.00**
	Total	**30**	**100**	**30**	**100**
Control group	**Knowledge**	***Pre-Test***		***Post-Test***	
		n	**%**	**n**	**%**
	Good	**3**	**10.00**	**10**	**33.30**
	Less	**27**	**90.00**	**20**	**66.70**
	Total	**30**	**100**	**30**	**100**

Source: Primary data, 2023

Based on table 10, it can be seen that the results of the Pre-Test and Post-Test of respondent's family members in the intervention group did not change much with an increase in knowledge of 40.00%. For the control group, the percentage increase for the good category during the Post-Test was 33.40%.

Bivariate analysis

The results of statistical analysis of the presence of Ae. Aegypti larvae in their home environment in Rapoccini sub-district can be seen in table 11:

Table 11: Analysis of the Presence of Ae. Aegypti larvae in the respondent's residence before and after the intervention.

Presence of Larvae Aedes Aegypti		**Pre-test**	**Post-test**	***McNemar Test***
Intervention Group	Positive	30	1	p = 0,00
	Negative	0	29	
Control Group	Positive	30	28	p =0,50
	Negative	0	2	
Mann-Whitney Test		p = 1,00	p = 0,00	

Source: Processed SPSS data

Based on table 11, the intervention group showed a decrease in the number of larvae positive houses, from 30 positive larvae to 1 positive larvae in the post-test (week 12), with the results of the analysis of the p-value of 0.00 <0.005 so that there was an effect on the presence of larvae monitoring students after being given an intervention, namely larvae monitoring training and efforts to eradicate DHF mosquito nests. While the control group did not show a significant change with the results of the analysis of the p-value 0.50> 0.00, which means that there was no effect on the presence of students monitoring larvae after being given an intervention, namely training in monitoring larvae and efforts to eradicate DHF mosquito nests.

Table 12: Results of the analysis of the effect of respondents' knowledge about DHF and mosquito nests eradication on the presence of Ae. aegypti larvae

Knowledge	**Presence of Larvae Aedes Aegypti**						***P-value***
	Positive		**Negative**		**Total**		
	n	**%**	**n**	**%**	**N**	**%**	
Good	9	23,10	30	76,90	39	100	0,00
Less	20	95,2	1	4,8	21	100	
Total	**29**	**48,30**	**31**	**51,70**	**60**	**100**	

Source: Processed SPSS data

Table 12 shows that out of 39 respondents with good knowledge about DHF and efforts to eradicate DHF mosquito nests, 30 respondents (76.90%) were negative for Ae. Aegypti larvae in their home environment and 9 respondents (23.10%) still have Ae. Aegypti larvae in their home environment. Whereas from 21 respondents who had less knowledge about DHF and efforts to eradicate DHF mosquito nests, 20 respondents (95.20%) had positive Ae. Aegypti larvae.

Based on the results of the Chi-Square test analysis, the p-value is 0.00 <0.05, which means that there is an influence on the knowledge of larvae monitoring students about DHF and efforts to eradicate mosquito nests with the presence of Ae. Aegypti larvae in their home environment.

Table 13: Results of the analysis of the effect of respondents' attitudes about DHF and mosquito nests eradication efforts on the presence of Ae. aegypti larvae.

Attitude	Presence of Ae. aegypti larvae						*P-value*
	Positive		Negative		Total		
	n	%	n	%	N	%	
Positive	2	6,50	29	93,50	31	100	0,00
Negative	27	93,10	2	6,90	29	100	
Total	**29**	**48,30**	**31**	**51,70**	**60**	**100**	

Source: Processed SPSS data

Table 13 shows that out of 31 respondents who have a positive attitude towards DHF and mosquito nests eradication efforts, there are 29 respondents (93.50%) negative Ae. Aegypti larvae in their home environment and 2 respondents (6.50%) were still positive for Ae. Aegypti larvae in their home environment. While out of 29 respondents who had negative attitudes about DHF and efforts to eradicate DHF mosquito nests, 27 respondents (93.10%) had positive Ae. Aegypti larvae.

Based on the results of the Chi-Square test analysis, the p-value is 0.00 <0.05, which means that there is an influence on the attitudes of larvae monitoring students regarding DHF and efforts to eradicate DHF mosquito nests with the presence of Ae. Aegypti larvae in their home environment in Rapoccini sub-district.

Table 14: Results of the analysis of the effect of respondents' Action about DHF and mosquito nests eradication efforts on the presence of Ae. aegypti larvae.

Action	Presence of Ae. aegypti larvae						*P-value*
	Positive		Negative		Total		
	n	%	n	%	N	%	
Good	2	6,50	29	93,50	31	100	0,00
Less	27	93,10	2	6,90	29	100	
Total	**29**	**48,30**	**31**	**51,70**	**60**	**100**	

Source: Processed SPSS data

Table 14 shows that out of 31 respondents who had good actions towards DHF and efforts to eradicate DHF mosquito nests, 29 respondents (93.50%) were negative for Ae. Aegypti larvae in their home environment and 2 respondents (6.50%) were still positive for Ae. Aegypti larvae in their home environment. Whereas out of 29 respondents who had insufficient action against DHF and efforts to eradicate DHF mosquito nests, 27 respondents (93.10%) had positive Ae. Aegypti larvae.

Based on the results of the Chi-Square test analysis, the p-value is 0.00 <0.05, which means that there is an influence on the actions of larvae monitoring students regarding DHF and efforts to eradicate DHF mosquito nests with the presence of Ae. Aegypti larvae in their home environment in Rapoccini District.

Table 15: Analysis of the effect of respondent knowledge with the knowledge of family members in their residence in Rapoccini sub-district.

Larva Monitoring Students	Respondent's Family Knowledge						*p-value*
	Less		Good		Total		
	n	%	n	%	n	%	
Exist	12	40,00	18	60,00	30	100	**0,69**
Not exist	20	66,70	10	33,30	30	100	
Total	**32**	**53,30**	**28**	**46,70**	**60**	**100**	

Source: Processed SPSS data

Based on table 15, it can be seen that out of 30 respondents who are larvae monitoring students, 18 respondents (60.00%) have good knowledge of their family members, while those who do not have larvae monitoring students in their houses have 20 respondents (66.70%) whose family members have less knowledge. Based on the Chi-square test analysis, the p-value = 0.69, where $\alpha < 0.05$, so there is no significant effect of the presence of student larva monitors on the knowledge of family members about dengue fever and mosquito nests eradication efforts in the houses.

DISCUSSION

The presence of Ae. Aegypti larvae based on Container Index in the respondents' living environment in Rapoccini sub-district.

Efforts to eradicate mosquito are currently the best efforts that can be made to reduce the number of DHF sufferers because by creating clean and good environmental conditions can make mosquito breeding not optimal, so this can be a small opportunity for dengue transmission. With various control efforts, it is no less important to increase public awareness in order to create a better and cleaner environmental sanitation and they can understand the mechanism of dengue transmission and its control efforts. Eradication activities are carried out anywhere, anytime, by anyone covering all levels of society in the region so as to break the life cycle of mosquitoes that can cause infectious diseases (Indonesia Ministry of Health, 2016).

The results of the analysis in this study showed that there were changes in containers containing Ae. Aegypti from the beginning of observation to the end of observation in week 12. The p value <0.05 means that there is an influence of larvae monitoring students on the presence of larvae based on the Container Index value in the houses. The container that has quite a lot of larvae is used goods. This is in line with research that has been done before, that there is a relationship between landfill and the presence of larvae of Ae. Aegypti larvae in the Makassar City DHF endemic area. Suggestions from the results of this study are to reduce the number of existing landfills so that they do not become breeding grounds for mosquito larvae (Kusumawardani, 2020).

With the intervention of eradicating mosquito nests in the school environment and where they live, it can increase student participation as a community itself. As it is known that many children are DHF sufferers, this is due to the activities of students from morning even until evening. Therefore, students are at risk of being infected with DHF disease transmitted by mosquitoes themselves. Therefore, everyone has their own responsibility in eradicating mosquito nests. The presence of potential mosquito breeding sites can affect the larval density level. This density level is closely related to the incidence of DHF (Irma, 2023 The faster life cycle of the vector breeding stage will affect the larval density level. For Ae. Aegypti larvae takes place within 6-8 days (Pahlepi, dkk. 2019).

The results showed that the density of larvae in the container decreased from week to week during the observation. This decrease is an effort of the respondents themselves in carrying out mosquito nests eradication efforts and creating a cleaner and healthier environment (Masnarivan, 2021). Based on research by Haifdz, et al (2022), there is an effect of the intervention on the behavior of monitoring larvae by the students themselves. By implementing Clean and Healthy Living Behavior (PHBS) in the school environment, it can be part of the larvae monitoring activities.

Meanwhile, the used goods are used water bottles that are recycled to be used as flower pots. This step is good enough to be part of efforts to control dengue by utilizing used goods for recycling, unfortunately these items are not noticed and have not been used. These used items are the result of an assignment given to students in creating a more beautiful mini garden, but this assignment was not followed up. As a result, items that have water become mosquito breeding grounds. This used item is in a mini garden made of iron and is often closed, so it is rarely cleaned by students at the school.

Knowledge, attitudes and actions of larvae monitoring students regarding DHF in mosquito nests eradication efforts

According to Bloom's Taxonomy (1908) behavior has three domains, namely Cognitive (knowledge), Affective (Attitude) and Psychomotor (Action). Knowledge is the most basic aspect, where each individual can recognize and remember an object, procedure, concept, definition, name, event, or conclusion. This attitude itself is a closed reaction from a person to an object, or a readiness for action. Meanwhile, action is a link with various aspects of skills involving the nervous system and muscle functions and psychological functions (Notoatmodjo, 2014).

Interventions carried out using the lecture method, this method is quite common and easy to do, especially for respondents who are students. In this study, based on the results of discussions with the teacher as the person in charge, this lecture is better because students are very easily distracted, so the information provided must be informative even This is same with research conducted by Nur,

et al (2023) that the lecture method is very large in influencing the improvement of students' knowledge and attitudes, with the effectiveness of delivery for 20 minutes.

Based on the results of the analysis of Pre-Test and Post-Test knowledge between the two groups, the results of each p value < 0.05, so it can be concluded that there is a difference in the average knowledge score before and after the intervention regarding DHF and mosquito nests eradication efforts.

This is same with research conducted by Tina & Farha (2021), hat there is a significant difference between the Pre-Test and Post-Test knowledge scores with a p value = 0.00. The respondents were given interventions with counseling methods, animated videos and larvae monitoring. The knowledge that respondents understood was about Ae. Aegypti mosquito larvae and the spread of dengue disease with the aim of increasing the understanding of larvae monitoring students and increasing larva counts located at state elementary school of Assilu.

Attitude is how the larva monitoring students themselves respond to stimuli provided in the form of interventions regarding dengue fever and mosquito nests eradication efforts. In this case, a positive attitude is the tendency of students to accept a thought or aspiration that is conveyed so that it brings benefits to both parties, in this case it can be a form of mosquito nests eradication efforts. (Asriwati, 2021). This is same with research conducted by Istiqomah, et al (2023) that there is a difference in attitude between the intervention group and the control group with the results of the p value < 0.05. Individual attitudes can be influenced by several things, including personal experience, the influence of others, mass media, educational institutions and emotional factors.

In the study, the results showed a p value < 0.05 that there was a difference between the actions taken by the intervention group and the control group. In addition, based on the results of the Mann-Whitney test with a p value < 0.05 that there is an influence on the actions of the intervention group about dengue and mosquito nests eradication efforts. In this study, students who monitor larvae have good knowledge and attitudes, so that they can have a good effect on the actions of the students themselves in carrying out their duties and roles as larvae monitors in their environment. In addition, with the support of facilities, encouragement from teachers can be a factor that can influence the actions of the students themselves.

In research conducted by I Made, et al (2021) that students who monitor larvae play an important role in surveillance, preventive and promotive activities. The activities carried out by providing an understanding of dengue disease and students monitoring mosquito larvae. the results obtained are that there is an increase in the knowledge and skills of larvae monitoring students by periodically eradicating mosquito nestss in their environment.

Based on the Technical Guidelines for student larvae monitors, community participation in DHF control is very important, because DHF vectors that exist around settlements and adult mosquito breeding sites are in the community environment in everyday life. School children are a layer of society that can be part of supporting government programs with their strategic role, considering that around 20% of the population is school children. The role of students is not only preventive and surveillance, but also promotive. Students who monitor larvae are able to disseminate information about dengue fever and disease control efforts in their houses (Asriwati, 2021).

Influence of the presence of larvae monitoring students on family members' knowledge of dengue fever and mosquito nests eradication efforts

Based on the Technical Guidelines for Larva monitoring (Juknis-Anak Sekolah), community participation in DHF control is very important, because DHF vectors that exist around settlements and adult mosquito breeding sites are in the community environment in everyday life. School children are a layer of society that can be part of supporting government programs with their strategic role, considering that around 20% of the population is school children. The role of students is not only preventive and surveillance, but also promotive. Students who monitor larvae are able to disseminate information about dengue fever and disease control efforts in their houses. (Ministry of Health, 2014).

In this study, student larvae monitors did not conduct direct monitoring of larvae. Respondents carry out their role as part of promotion where the presence of these larval monitoring students can

increase support from parents and supported by existing facilities. Student larvae monitoring in the experimental group were given a pocket book which would be useful for increasing the knowledge of the respondents themselves and family members in their houses.

The results of this study obtained the results of the analysis with a value of $p < 0.05$ which means that there is no effect of the presence of larva monitoring students on the knowledge of their family members themselves. Knowledge can be improved by providing direct knowledge material about dengue disease and its control efforts, as well as providing motivation in environmental arrangements to create active behavior in control efforts. In this study, the process of providing material was not direct, therefore this could be a factor in the lack of knowledge of family members of larva monitors. In theory, action has various stages, one of which is adoption.

This effort is one of the actions that have developed. The presence of motivation can affect the quality of the action taken. Research conducted by Andreas, et al (2020) on larva monitoring students affects the results of HI and CI in students who receive training and those who do not receive training. There is a significant relationship between students who monitor larvae and the presentation of CI in students' houses with a p value <0.05. As for the CI results in both groups with a p value <0.05 so there is a significant difference between CI in the intervention group and the control group.

CONCLUSION

There is a significant effect of the presence of student larva monitors on the Container Index in the houses with a decrease in the Container Index (CI) value in the respondent's residence based on the knowledge, attitudes and actions of student larva monitors regarding dengue fever and mosquito breeding efforts. There was no significant effect of the presence of larva monitors on the knowledge of DHF and mosquito nests eradication efforts of one of the family members in their residence.

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