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Improving Community Knowledge and Behavior in the One House One Jumantik Program in Dengue Control

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Article Info

Abstract

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Indonesia is a dengue-endemic country with cases of death every year, including East Kalimantan. One house one jumantik/larva monitor (G1R1J), has been carried out in Samarinda, East Kalimantan but has never been evaluated and implemented. This study aims to determine the communities' knowledge, attitudes, and actions regarding G1R1J, as well as to see the effect of mentoring by cadres. This research is a quasi-experimental research with a control design. The research activities took time from March - November 2019. Measurements were taken before and after treatment by conducting a pre-test and post-test in Sidodadi Village as an intervention and Dadimulia as a control. The sample size in this study was 300 respondents with the criteria of the occupants of the house/ building appointed/person in charge of implementing G1R1J. The instrument used is a questionnaire. T-test statistics are used to determine differences in the control and treatment areas, as well as before and after the intervention. The results showed an increase in knowledge, attitudes, and actions regarding the understanding, symptoms, and causes of dengue fever, as well as about one house one jumantik/larva monitor (G1R1J) after assisting cadres when compared to the control area. There was a statistical difference between the treated areas when compared to the good control areas. Optimum utilization of cadres should be an alternative to reduce the incidence of DHF in the community.

Introduction

Indonesia is located in the tropics and is endemic to dengue. Deaths occur every year. East Kalimantan Province is one of the endemic areas for dengue fever in Indonesia. The case number or Incidence Rate (IR) of DHF in East Kalimantan Province in 2018 was 20.2. At the beginning of 2019, it was 11.8. Almost every year since 2014, the IR of DHF in the City of East Kalimantan is the highest compared to 11 other districts/cities in East Kalimantan Province. The activities of the DHF control and prevention program that are routinely carried out by the Health Office of the City of East Kalimantan are fogging, larviciding, and periodic larval monitoring carried out by village cadres together with the DHF program manager at the Puskesmas. Although various efforts have been carried out, cases of dengue

fever in East Kalimantan City remain high(East Kalimantan Provincial Health Office, 2021).

In 2018, the City of East Kalimantan carried out the one house one jumantik/larva monitor (G1R1J) socialization activity. This socialization is a follow-up to the Circular of the Minister of Health containing an invitation to urge the public to carry out the Eradication of Mosquito Nests (PSN) 3M (close, drain, bury) Plus by activating G1R1J in their residential neighborhoods (Circular Letter Number PM. 01.11/Menkes/591/2016 concerning Implementation PSN 3M 3m Plus with G1R1J, 2016. East Kalimantan Province is one of 111 regencies/cities that implemented G1R1J in 2018, with implementation indicators in the form of the issuance of a G1R1J Implementing Team Decree. G1R1J is a program to prevent dengue transmission through family-based

community empowerment. The spearhead of G1R1J is the Home and Environmental Jumantik, namely community members in every household who are trained to monitor and clean mosquito larvae in their homes and surroundings through the 3M Plus PSN movement and record the results on an examination card (Ridha et al., 2022).

The home and neighborhood jumantik (larva monitor) guidance is carried out by the coordinator who is usually a health cadre who is active in the community. The health cadres come from the community themselves. So more effective in increasing public awareness(K. Kartini et al., 2021). A jumantik coordinator is a vital element in the success of the G1R1J program. The recommendation from the jumantik coordinator, in this case, the health cadres, can influence the community's actions to participate in the eradication of DHF (Pratama et al., 2017). The jumantik coordinator should be equipped with knowledge and skills, so they can independently carry out their duties. Several studies state that the participation of cadres in the community is influenced by motivation, knowledge and technical skills, social skills, planning, and problem-solving abilities(Akol et al., 2017)(Simamora, 2017). Good knowledge and perceptions make cadres able to deliver counseling well. The positive attitude of cadres will have an impact on the willingness to be proactive and responsible in providing socialization to the community (Dewi & Anisa, 2018).

The G1R1J activities carried out in the City of East Kalimantan are still limited to socialization with the managers of the DHF control program at the Public Health Centre (Puskesmas) and distribution of larvae examination cards. It is not yet known how the community understands and implements G1R1J in East Kalimantan City. This study aims to determine the knowledge, attitudes, and actions of the community related to the implementation of the 1R1J movement and to see the effect of the pattern of cadre assistance on the knowledge, attitudes, and actions of the community in G1R1J.

METHOD

The observation changed into authorized

through The Ethics Commission, National Institute of Health Research and Development, Indonesian Ministry of Health with the moral clearance variety LB.02.01/2/KE.296/2018. This research was carried out in Samarinda City, namely in Samarinda Ulu District, Sidodadi Village as an assisted area (intervention), and Dadi Mulia Village without assistance (control). The research took time from January to November 2019. The research design was quasiexperimental with control. The population in this study are community members who occupy houses/buildings in Sidodadi and Dadi Mulia Villages.

The sample in this study were household members appointed/responsible for carrying out G1R1J activities in each house/building. Based on the calculation, the minimum sample was 300, namely 150 for the control and 150 for the intervention (Whitley & Ball, 2002). Pre and post-test data were collected to measure differences in knowledge, attitudes, and actions of the community in the intervention area. Assistance in the form of counseling and Focus Group Discussions (FGD) was carried out for problem-solving, while the control area was not. Assistance is provided to cadres, followed by the head of the RT and village officials. Mentoring and FGD were conducted 5 times for 5 months. Assistance in this study was by cadres as jumantik coordinators. The process of mentoring cadres is interspersed with counseling. The cadre will accompany the house jumantik performing PSN (mosquito's nest eradication) actions and records the larva inspection card. In addition, assistance was provided to cadres by the puskesmas team. Assistance activities by the puskesmas by FGD containing discussions, consultations, and advocacy regarding PSN activities carried out by Jumantik Rumah, recording examination results, PSN monitoring activities, and visiting activities by the Jumantik Coordinator, and analysis of larvae-free rates by the Jumantik Supervisor.

The instrument in this activity is a structured questionnaire conducting interviews with adults in the selected sample houses. Data analysis used univariate analysis which presented the percentage of the characteristics of the research sample. Univariate data analysis aims to explain the frequency distribution of the variables studied, namely knowledge, attitudes, and actions. The bivariate data analysis then used t-test paired sample to determine differences in knowledge, attitudes, and actions before and after the intervention. Then, to see the difference between the values of knowledge, attitudes, and actions between the intervention and control areas during the post-test, a different test was carried out using an independent sample t-test.

Table 1. Characteristics of Respondents

Variables	Sidodadi (%)	Dadimulia (%)
Average density occupant house	4.29 (1-11)	4.15 (1-11)
Gender	T.27 (1-11)	4.13 (1-11)
	84.7	00.7
- Man		90.7
- Woman	15.3	9.3
Ages		
- 15-25	1.3	0
- 22-55	52	50
- >56	46.7	50
Education		
- Never school	10.3	4.6
- Elementary school	26	29.3
- junior high school	16	16.7
- high school	33.7	41.3
- Graduated	14	8.1
Occupation		
- Not work	10.7	16
- Government	8.7	20.7
- Employee	15.3	35.3
- Entrepreneur	41.3	10.7
- Farmer	5.3	1.3
- driver	5.5 12.7	13.3
- Other	6	2.7

Source : Primary Data, 2019

The Average density occupant houses is generally 4.29 in Sidodadi and 4.15 in Dadimulia. Respondents are generally men with an age range of 22-25. The level of education is high school, with the most jobs as entrepreneurs in Sidodadi and employees in Dadimulia (Table 1). There was a significant increase in knowledge on pre and post. Knowing jumantik and G1R1J increased in Sidodadi when compared to Dadimulia. The source of this knowledge was previously from officers of the Public health center (58.3%) to cadres (60.4%) (Table 2). There was an increase in the attitude of the respondents. Although it was not significant, the attitude of the respondents before the intervention was good. Respondents generally wanted to conduct further socialization regarding G1R1J, cadre visits, and inspections every 2 weeks and agreed that sanctions were applied if violated (Table 3). Community practice changes in behavior, especially in draining reservoir water and recycling goods. It is per the pattern of finding mosquito larvae by the community which increases in bathtubs, buckets, drums, plant pots, and decreases in sewers. The community's plaque also increases by draining and storing water and keeping fish (Table 4). Muhammad Rasyid Ridha, et all. / Improving Community Knowledge and Behavior in the One House One Jumantik Program in Dengue Control

			Sidodadi (%)		Dadimulia (%)	
KNOWLEDGE			Pre	Post	Pre	Post
Know Jumantik	-	Yes	23.3	73.6	23.3	45.8
	-	Not	76.7	26.4	76.7	54.2
Vnov C1D1I	-	Yes	8	68.6	8	17.4
Know G1R1J	-	Not	92	31.4	92	82.6
Source Information	-	RT/RW	25	28.1	8.3	8
G1R1J	-	Village / District	41.7	9.4	16.7	0
	-	Cadre	25	62	41.7	8
	-	Family	9.7	1	16.7	0
	-	Officer of Public health center	58.3	60.4	58.3	76
	-	Health Service Officer	25	0	2.1	8
	-	Print and Electronic Media	25	4.2	25	16
	-	Other	8.3	1	8.3	4
Knowing G1R1J Card	-	Yes	0	100	65	10
	-	Not	0	1	42	88

Table 2	Knowledge	Respondent F	Pre and Po	st Intervention
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Source : Primary Data, 2019

Table 3. Attitude Respondent Pre and Post Intervention

ATTITUDE	Sidodadi (%)		Dadimulia %)	
ATTIODE	Pre	Post	Pre	Post
G1R1J no need socialized	10	16	16	4.2
G1R1 J need held at each house	95	95	95	97.2
All member house ladder responsible to cleanliness environment around home		97	99	96.5
Examination card larva must be filled when doing an inspection flick		97	92	90.3
3M plus activities no need conducted at each house	17	12	30	6.9
Only environment in house only need _ noticed cleanliness	11	14	15	26.4
Need drain bathtub or _ water storage at least 1 week 1 time	97	96	96	95.8
Visit officer / cadre Jumantik required for monitor environment around house inhabitant	97	92	96	95.8
I feel disturbed when visited officer or cadre Jumantik 2 weeks very	15	14	17	11.8
House which found flick given sanction Source : Primary Data, 2019	59	57	59	61.1

The different tests in the Sidodadi village area before and after the intervention, as shown in Table 5, showed a significant difference in the average value of knowledge level and behavior/ action. Meanwhile, at the attitude level, there was no difference in values before and after the intervention. The mean value on knowledge and behavior shows a negative sign, which means the mean score before the intervention is lower than the mean score after the intervention. The average attitude value shows a positive value and the below indicates that the average attitude value before and after the intervention does not have a significant difference in the mean value.

The assessment was carried out again in Sidodadi Village (intervention) and Dadimulya Village (control) after the intervention was carried out can be seen in Table 6. The results show a significant difference between the two villages regarding knowledge and behavior/ action, whereas Sidodadi Village has a higher average value than Dadimulya Village. However, the mean value of the Dadimulya Village attitude is slightly higher than Kelurahan Sidodadi, although it is not significantly different.

	Practices		Sidodadi (%)		Dadimulia (%	
		Pre	Post	Pre	Post	
Do you do PS	SN 3M plus as follows :					
-	Drain water reservoir	91	99	93	97	
-	Close meeting water reservoir	73	71	51	72	
-	recycle repeat goods used	11	21	6	17	
-	Changing flower vase water	15	9.3	8.7	7.6	
-	Sleep use mosquito net	6.7	6.4	8.7	8.3	
-	Using mosquito repellent	55	43	47	33	
-	To do larvicidation	7.3	5	5.3	1.4	
-	Caring for fish eaters flick	4.7	2.1	3.3	0.7	
-	Use trap mosquito	2	4.3	1.3	0	
-	Plant plant repellent mosquito	4	0.7	4.7	1.4	
-	Install wire gauze mosquito	37	1.4	25	22	
-	Other	0.7	31	0.7	0	
Nhere to find	d mosquito larvae					
-	Bathtub / WC	66	73	53	60	
-	Bucket	19	32	21	27	
-	Drum	49	56	40	54	
-	Dispenser	7.3	22	6.7	11	
-	Refrigerator Landfill	0.7	5	3.3	4.2	
-	Shell coconut	0.7	0.7	0.7	0	
-	Plant pots	2.7	11	2	5.6	
-	The place drink animal	0.7	2.1	0.7	2.8	
-	Aquarium	1.3	3.6	0.7	1.4	
-	Pool	0	5	1.3	3.5	
-	Goods used	21	12	30	17	
-	sewer / gutter	47	19	36	22	
-	Holy water place	1.3		0	0.7	
-	Other	0.7	1.4	1.3	0	
What which	conducted if found mosquito larvae					
-	Throwing water	79	81	65	74	
-	Drain and brush	67	71	59	64	
-	Sprinkle drug exterminator flick	5.3	3.6	9.3	4.9	
-	Keeping fish	2.7	7.9	0.7	2.8	
-	Throw away the flick	3.3	1	4	4.9	

 Table 4. Practice Respondent Pre and Post Intervention

Source : Primary Data, 2019

Table 5. The Results of the Different Intervention Areas at the Time of Pre and Post Conducted Intervention

	mean	Standard Deviation	f
Knowledge	-49,836	43,350	0.000
Attitude	0.950	18,784	0.551
Practice	-32.457	30,303	0.000

Source : Primary Data, 2019

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G	roup	Mean	Standard Deviation	f
T Z 1 1	Intervention	63.42	38,411	0.000
Knowledge	Control	19.63	20,384	
Attitude	Intervention	86.94	12,468	0.291
	Control	88.52	12,683	
Behavior	Intervention	50.86	24,975	0.000
Denavior	Control	14.66	10,051	

Table 6. Test Different Among Ward Sidodadi and Dadimulia Post Conducted Intervention

Source : Primary Data, 2019

Public perception of the G1R1J program in this study varied widely. This condition is closely related to, one of them, the knowledge that is not yet comprehensive about dengue disease. It can be said that it influences his behavior in preventing the transmission of DHF. The knowledge-attitude-behavior model assumes that knowledge is vital to influence behavior change and that individuals can acquire knowledge and skills through learning (Sas et al., 2021). It is in line with the results of a study in Denpasar which showed that people with low levels of knowledge had a 2.72 times risk of developing DHF compared to people with higher education (Purnama et al., 2013). However, there is a tendency for the community not to absorb all the information obtained, which needs attention. This phenomenon is related to the level of motivation and views of each individual in responding information. When individuals do not feel the benefits, the information tends to be forgotten (Needham et al., 2018). The health belief model (HBM) approach is the basis for looking at cadres' perceptions of the G1R1J program in Samarinda City, East Kalimantan Province. This health belief model describes the existence of a person's consideration before behaving healthily. Following what was reported in a study in South East Ethiopia that the perception of severity is often based on medical information or other knowledge (Nigussie et al., 2019).

Understanding the severity of DHF varies depending on the knowledge and experience possessed by a person. Following the results of the study stated that the perception of the severity of DHF had a relationship with efforts to prevent DHF by the research subjects (Kumaran et al., 2018). If the perception of vulnerability is high, the greater the efforts to prevent DHF. On the other hand, the smaller the assessment of perceived severity, the worse the efforts to prevent DHF are carried out. Appropriate counseling and empowerment of the community affect the success of the program. It is evidenced by research findings that community empowerment interventions show a significant increase in health knowledge (AhbiRami & Zuharah, 2020)(Rubenstein, 2016). Increased health knowledge makes it easier for people to understand the program implemented.

Community participation in health programs, apart from socialization, is also necessary to build trust from the relationships formed. Several studies report the successful implementation of the partnership process in a community empowerment intervention(Zhang, 2020)(Melo & Alves, 2019)(Melo & Alves, 2019). The results of the study prove that the existence of routine health counseling conducted by the puskesmas is one of the factors that correlate to the decrease in the incidence of DHF in elementary schools (P. R. Kartini et al., 2018). Likewise at the family level, to reduce the occurrence of cases of dengue infection, it is necessary, promoting health in the family is required to improve the knowledge, attitudes, and behavior of the community.

The substance of the G1R1J program is the empowerment of family members as jumantik, which previously were carried out by cadres. The delegation of tasks to the house jumantik is not yet complete due to the gap between the cadres and the house jumantik. Some house jumantik still depend and rely on cadres (jumantik coordinators) in implementing PSN. The difference in the implementation role between the jumantik coordinator and the house jumantik can be caused by motivational factors. The study stated that cadres have internal and external motivation in carrying out their duties(Ratnasari et al., 2019). The most influential internal motivation is the responsibility, while external motivation is social relations. This motivation may not be owned by the house jumantik to be able to carry out their duties properly.

The results of the study describe an increase in the G1R1J intervention area in Samarinda City. The role of cadres in conducting counseling and assistance in the community can mobilize the community in efforts to eradicate mosquito advice. Previously encountered obstacles can then be overcome. On the other hand, another finding from the interview is the pragmatic attitude of the residents when larvae are found in their homes, assuming that in that place (their house), it is common to find larvae. It shows that cadres, as the spearhead of the G1R1J program implementation, cannot stand alone. The efforts of cadres require the support of the puskesmas as stakeholders and cross-sectoral collaboration with community leaders in their working areas, such as RT and RW. It is in line with (Simamora, 2017) stating that puskesmas and health offices should carry out regular outreach efforts to increase public knowledge about DHF and PSN.

The sustainability of this community empowerment program is closely related to a strong sense of belonging from the community to the program itself (Chon et al., 2020) (Rinawan et al., 2017). Increasing the sense of belonging to G1R1J needs to be carried out through cross-program and cross-sectoral activities. Socialization regarding the technical implementation of G1R1J is one way to increase public knowledge and awareness, which can affect a sense of belonging to the G1R1J program. There are still people who are not socialized with this program technically. Socialization by officers still needs to be improved. It is as reported (McCreight et al., 2019) stated that the role of officers is significant in influencing the behavior of eradicating mosquito nests by the community. The limitation of this study is that it is necessary to evaluate in the following year with a wider role. The findings in this study cannot be generalized to other areas where

dengue is endemic in the implementation of G1R1J.

CONCLUSION

There is an influence of community knowledge and behavior on the interventions carried out by cadres. Besides, there is also an influence between the intervention and control areas. G1R1J activities by empowering cadres are expected to reduce cases of dengue fever in the community. The role of cross-sectors such as sub-districts, sub-districts, and community health centers can be increased by conducting one mini-workshop every 2-3 months.

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