

BRIEF REPORT

Analysis of Factors Related to the Activity of Larva Monitoring Officers to Control Dengue Hemorrhagic Fever in Tangerang District

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Abstract

Background: Dengue hemorrhagic fever (DHF) is an infectious disease in which the vector is *Aedes aegypti*. It is one of the most serious global health problems because it often leads to outbreaks. Indonesia is an endemic country, and Tangerang Regency is one of the areas in Banten Province that frequently experiences DHF outbreaks. **Methods:** The research was conducted to analyze the factors related to the activity of larva monitoring officers, the role of the officers, the control effort, and the implication to the frequency of DHF occurrence in Tangerang Regency. The research used the explanatory (analytical) approach in Tangerang Regency, and 185 questionnaires were distributed. Univariate, bivariate, and multivariate analyses were conducted. **Results:** The result shows that a direct and indirect relationship exists between the activeness of the officers, the efforts to control DHF, and the implication to the frequency of DHF cases in Tangerang Regency. The results of the research on DHF control activities show that only 5 out of 12 factors are influential. **Conclusion:** Dengue control activity, strengthening of the leadership system, and improvement of the role of larva monitoring officers are factors that positively influence the frequency of DHF incidence in Tangerang District. Efforts to control DHF in this study most positively influence the low frequency of dengue fever occurrence in the region of Tangerang Regency.

Keywords: officer characteristics, officer activity factors, surveillance system, epidemiology

Introduction

Dengue hemorrhagic fever (DHF) is an infectious disease in which the vector is the *Aedes aegypti* mosquito¹. It is one of the most serious global health problems because it often results in extraordinary

events is too broad. Tangerang Regency, one of the areas in Banten Province, Indonesia, often experiences a high occurrence of DHF. DHF control efforts have been carried out by local governments

both across sectors and across programs with environmental hygiene, biological, chemical self-protection, and integrated approaches².

To optimize the DHF control, the government is attempting to reduce the spread of DHF by facilitating many programs. Given that DHF incidence continues to occur, the effort to minimize it also continues. One of these programs involves a cadre of monitoring officers who monitor larvae. In Tangerang District, at least 1,000 larva monitoring officers were mobilized in 2016, when the region experienced a high incidence of DHF³. Efforts to control and prevent dengue fever continue to be encouraged and are implemented in an organized manner in the city and in the village⁴. These efforts include counseling and education on patient management for doctors and paramedics, eradicating mosquito breeding areas with community participation, and strengthening the human resource capacity⁵. Thus, dengue fever cases are expected to decrease from year to year.

This research attempts to describe the activity of larva monitoring officers, activeness of the officers, efforts to control DHF, and their implication to the frequency of DHF occurrence in Tangerang Regency. This research also attempts to identify the direct and indirect relationship between the

dominant factors, namely, officer activity, efforts to control DHF, and their implication to the frequency of DHF occurrence in Tangerang Regency.

Method

The research was conducted using an explanatory (analytical) approach⁶ through a survey in Tangerang Regency. The sample was composed of 185 larva monitoring staff spread in Balaraja, Tigaraksa, Pasarkemis, Curug, Cikupa, Panongan, Legok, Kelapadua, Jambe, Kronjo, Kemiri, Teluk Naga, Kosambi, Gunungkaler, Kresek, and Sepatan Timur Subdistricts. The main instrument of this research is questionnaire. Univariate, bivariate, and multivariate analyses were performed.

Results and Discussions

The results of the research and descriptive observation showed that the factors of activeness of the officers, role of larva monitoring officers, and efforts of controlling dengue fever were satisfactory, and the frequency of DHF in Tangerang Regency was relatively low. The magnitude of the relationship between research variables can be analyzed from the table below:

Table 1. Relationship between Research Variables

NO	VARIABLE RELATIONSHIPS	N Sample	GREAT EFFECT			Corellation Value		R Square		Conclusion
			F.hit	F.tab	Sig.	r.Hit	r.Tab	R	%	
1	Relationship or influence of Activity Factors of Officers with the Activeness of the Role of the Larva Monitoring Officer	185	46,025	3.89	0,000.	0,873.	0.144	0.763	76,3	H0: $\rho_{1x112} = 0$. Ha: $\rho_{1x112} \neq 0$ Ho: $\rho \leq \alpha$ means H0 is rejected H1: $\rho \geq \alpha$ Means Ha accepted At Value $\alpha = 0.05$
2	Relationship or influence between Factor activeness of officer with effort of controlling activity of Dengue Fever in Tangerang Regency	185	43,864	3.89	0,000.	0,868*	0.144	0.754	75,4	H0: $\rho_{2x112} = 0$ Ha: $\rho_{2x112} \neq 0$ Ho: $\rho \leq \alpha$ means H0 is rejected H1: $\rho \geq \alpha$ Means Ha accepted At Value $\alpha = 0.05$
3	Activity Relation Role of officer with DHF Control Activity Efforts in Tangerang Regency	185	243,118	3.89	0,000.	0,749*	0.144	0.561	56,1	H0: $\rho_{1y2} = 0$ Ha: $\rho_{1y2} \neq 0$ Ho: $\rho \leq \alpha$ means H0 is rejected H1: $\rho \geq \alpha$ Means Ha accepted At Value $\alpha = 0.05$
4	Relationship of Activeness of the Role of the Monitoring Officer on the Frequency of Dengue Fever in Tangerang District	185	28,860	3.89	0,000.	0,369*	0.144	0.136	13,6	H0: $\rho_{1Z} = 0$ Ha: $\rho_{1Z} \neq 0$ Ho: $\rho \leq \alpha$ means H0 is rejected H1: $\rho \geq \alpha$ Means Ha accepted At Value $\alpha = 0.05$
5	Relation Efforts DHF control activity on Frequency of Dengue Fever in Tangerang District	185	37,578	3.89	0,000.	0,413*	0.144	0.170	17,0	H0: $\rho_{2Z} = 0$ Ha: $\rho_{2Z} \neq 0$ Ho: $\rho \leq \alpha$ means H0 is rejected H1: $\rho \geq \alpha$ Means Ha accepted At Value $\alpha = 0.05$
6	Activity Relation of the Role of the Larva Monitoring Officer and the effort of DBD control on Frequency of Dengue Fever in Tangerang Regency	185	19,777	3.89	0,000	0,423*	0.144	0.179	17,9	H0: $\rho_{1x1-12} = 0$ Ha: $\rho_{1x1-12} \neq 0$ H0: $\rho_{2x1-12} = 0$ Ha: $\rho_{2x1-12} \neq 0$ Ho: $\rho \leq \alpha$ means H0 is rejected H1: $\rho \geq \alpha$ Means Ha accepted At Value $\alpha = 0.05$

Table 1 above displays the relationship among the factors that influence the activeness of officers, which consists of knowledge of officers, work ethos and interests, division of work, job description, training and career development, recognition and self-existence, reward or compensation, availability of work facilities, personal motivation, family support, leadership system, and work environment. The role of larva monitoring officers as a whole shows a positive relationship or influence, which is proved by the F hit value of 46,025 and the value sign by 0.000. The result shows that 5 out 12 variables significantly influence the role of larva monitoring officers in controlling DHF in Tangerang

Regency. These variables are as follows: leadership system, 0.270 or 27.0%; work environment, 0.292 or 29.2%; personal motivation, 0.145 or 14.5%; and knowledge of officers, 0.236 or 23.6% to the activeness of the cadre. The other 8 variables did not significantly affect the role of larva monitoring officers. These variables are as follows: training and career development, 0.037 or 0.37%; recognition and self-existence, -0.032 or -0.32%; ethos and employment interest, 0.050 or 0.50%; area division or work roaming, -0.045 or -0.45%; job description, 0.031 or 0.31%; family support, 0.050 or 0.50%; reward or compensation, 0.025 or 0.25%; and availability of working facilities, 0.001 or 0.01%.

The relationship between factors that affect the activeness of officer and the effort of controlling dengue fever as a whole was positive, as proven by the F hit value of 43,864 and sign value of 0.000. The result of the research and observation showed that only five factors influence the dengue control activities in Tangerang Regency. Those factors are as follows: work description, -0.123 or as high as -12.3%; family support, 0.173 or 17.3%; leadership system, 0.367 or 36.7%; personal motivation, 0.109 or 10.9%; and officers' knowledge, 0.241 or 24.1%. The other factors do not significantly affect the DHF control activities in Tangerang Regency. These factors are training and career development, 0.029 or 0.29%; recognition and self-existence, -0.022 or -0.22%; ethos and work interest, -0.010 or by 0.10%; division of Jelaja work, 0.057 or 0.57%; reward or compensation, 0.090 or 0.90%; availability of working facilities, 0.061 or 0.61%; and the working environment, 0.028 or 0.28%.

Activity Relationship

The role of officers in the DHF control activity efforts shows a very strong relationship or influence, as proven by the F hit value of 243,118 and sign value of 0.000. The relationship between the role of the larva monitoring officers and the frequency of dengue fever is positive, as proven by the F hit value of 28,860 and sign value of 0.000. The relationship between efforts to control DHF activity and frequency of dengue fever is positive, as proven by the F hit value greater than the F tab of 37,578 and sign value of 0.000. The relationship between the activeness of the role of larva monitoring officers and the DHF control effort on the frequency of dengue fever is positive, as proven by the F hit value of 19,777 and sign value of 0.000. The total quantity of the direct and indirect relationship between research variables can be analyzed in the following table.

Table 2. Total Influence of Standardized Total Effects (Group Number 1—Default Model) of Active Role of Officers, Efforts to Control DHF, and Frequency of DHF Incidence in Tangerang Regency

Variabel X Y1Y2 dan Z	Officers' Activity Factors						Variabel Y1	Variabel Y2
	LK	SK	MP	FK	PP	DK		
Variabel Y1 30	0.293	0.275	0.160	0.010	0.223	0.042	0.000	0.000
Variabel Y2 31	0.028	0.395	0.127	0.055	0.252	0.157	0.086	0.000
Variabel Z 32	0.031	0.134	0.049	0.016	0.089	0.048	0.105	0.283

Description: PP = Officers' Knowledge, LK = Work Environment, MP = Personal Motivation, SK = Leadership System, FK = Working Facilities, DK = Family Support, Var X = Activity Factor Officer, Var Y1 = Active Role of Larva Monitoring Officers, Var Y2 = Effort of DHF Control Activity, Var Z = Frequency of Dengue Event.

Table 2 shows the direct and indirect influence of the activity of the officers consisting of work environment, leadership system, personal motivation, work facility, officer knowledge and family support, active role of officers, effort of controlling DHF, and frequency of DHF incidence in Tangerang District.

The standardized total effects (group number 1—default model) are as follows: the work environment affects the active role of officers at 0.293, the effort of dengue disease control is 0.028, and the frequency of dengue incidence is 0.031. Leadership system influences the liveliness of the role of officers at 0.275, the effort to control dengue disease at 0.395, and the frequency of dengue fever occurrence at 0.134. Personal motivation affects the liveliness of the role of officers at 0.160,

control of dengue disease at 0.127, and frequency of dengue incidence at 0.049.

Availability of working facilities affects the active role of officers at 0.010, effort of dengue disease control at 0.055, and frequency of dengue fever occurrence at 0.016. Officers' knowledge influences the active role of officers at 0.223, effort of dengue disease control at 0.252, and frequency of dengue fever occurrence at 0.089. Family support affects the active role of officers at 0.042, effort of dengue disease control at 0.157, and frequency of dengue fever occurrence at 0.048. The activeness of the role of larva monitoring officers affects the effort of controlling DHF activity at 0.086 and frequency of DHF incidence at 0.105. Efforts to control dengue fever influence the frequency of DHF at 0.283. The relationship between total influences can be illustrated in the following diagram:

Figure 1. Total analysis of direct and indirect effects between variables

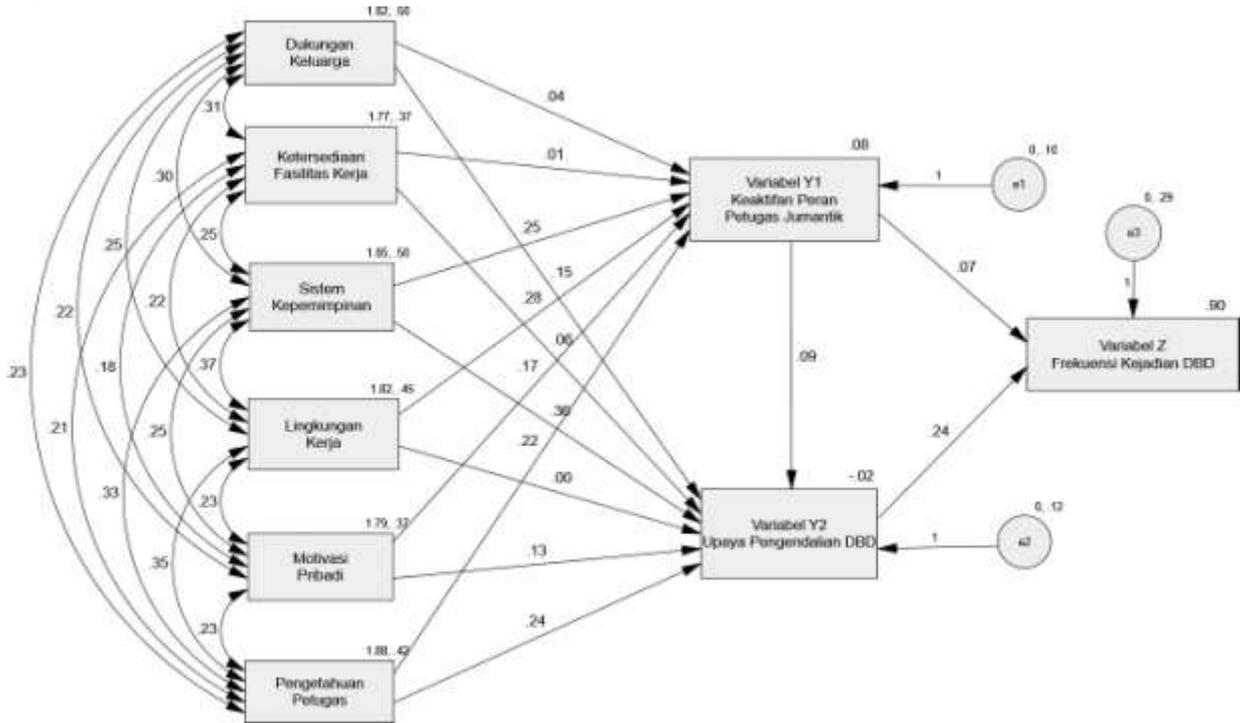


Figure 1 shows that efforts to control DHF, leadership system, and activeness of larva monitoring officers significantly influence the frequency of DHF incidence in Tangerang Regency. Based on Table 2 above, efforts to control DHF, leadership system, and active role of officers have the most positive implication to the high and low frequency of DHF incidence in Tangerang District. Among the three factors, efforts to control DHF most positively influenced the low frequency of dengue fever cases occurring in Tangerang Regency.

The results showed that the factors of activeness of officers, and efforts to control DHF have been running quite well, and the

frequency of DHF incidence in Tangerang District has been relatively low.

Conclusion

The activeness of larva monitoring officers, the active role of larva monitoring officers, the effort of DHF control, and the implication on the frequency of dengue fever occurrence in Tangerang Regency influence each other either directly or indirectly and has implications on the frequency of dengue fever cases in the region. Factors found to have both direct and indirect positively influence to the frequency of DHF incidence are dengue control efforts, leadership system, and active role of officers. Among these three factors, efforts to control DHF showed the

highest positive influence to the low frequency of incidence of dengue fever in Tangerang Regency.

It is suggested for the local government, in this case, the health office, the village government, and the subdistrict health center, to increase the activity of larva monitoring officers, and more attention should be given to leadership system, work environment, personal motivation, and knowledge of officers. Meanwhile, to increase the efforts to control DHF, the local government, in this case, the Tangerang Regency health office, should pay more attention to job description, family support, leadership system, personal motivation, and officers' knowledge. To control the frequency of DHF incidence, the local government should play an active role in the dengue control efforts, in the leadership system, and in increasing the active role of officers. Efforts to control DHF most positively influence the low frequency of incidence of dengue fever in Tangerang District.

Conflict of Interest

The authors declared that there is no competing interests exist.

References

1. Sumekar DW, Nurmaulina W. Upaya

- Pengendalian Vektor Demam Berdarah Dengue, *Aedes aegypti* L. Menggunakan Bioinsektisida. *J Major*. 2016;5(2):131–5.
2. Sandhi NPDA, Ni KM. Pengaruh Faktor Motivasi terhadap Kinerja Juru Pemantau Jentik dalam Pelaksanaan Pemberantasan Sarang Nyamuk di Kecamatan Denpasar Selatan Tahun 2013. *Community Health (Bristol)*. 2014;2(1):1.
3. Prayitno H. Analisa Faktor Kinerja Kader Jumantik dalam Pemberantasan DBD di Kelurahan Kadipiro Kota Surakarta. *IJMS-Indonesian J Med Sci*. 2016;3(2).
4. Legi NN, Rumagit F, Montol AB, Lule R. Faktor Yang Berhubungan Dengan Keaktifan Kader Posyandu Di Wilayah Kerja Puskesmas Ranotana Weru. *J GIZIDO*. 2015;7(2):429–36.
5. Direktorat Jendral P2ML. Petunjuk teknis pemberantasan sarang nyamuk demam berdarah dengue (PSN DBD) oleh juru pemantau jentik-[BUKU]. Kementerian Kesehatan; 2012.
6. Sandjojo N. Metode analisis jalur (path analysis) dan aplikasinya. Jakarta: Pustaka Sinar Harapan; 2011.